



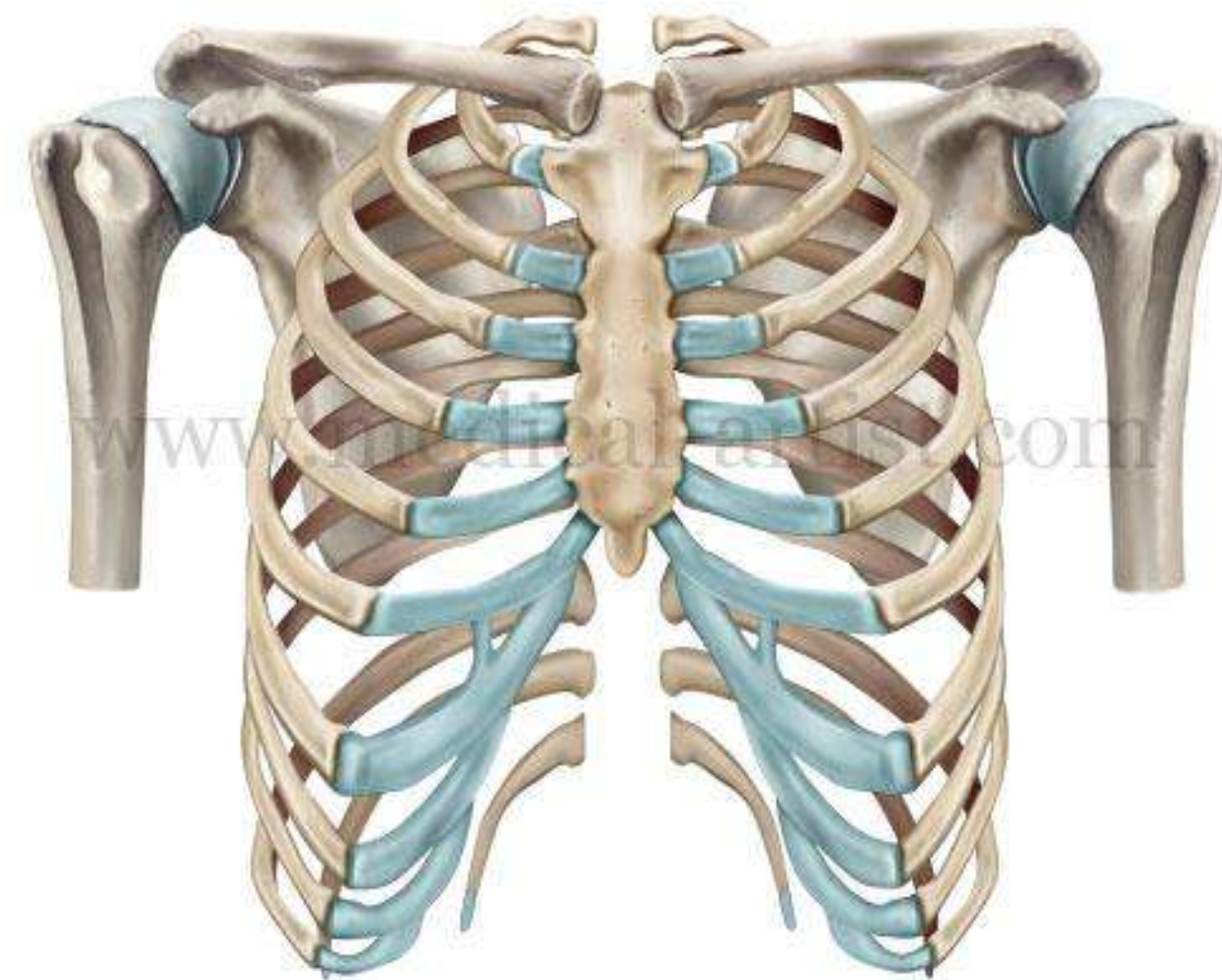
AFOQQ

SUNMARY
ANATOMY
M.E.G.A

محمد أيمن أبو مشايخ

Basic Anatomy

- The **thorax (or chest)** is the region of the body **between** the neck and the abdomen.
- **Superiorly** the thorax communicates with the neck.
- **Inferiorly** it is separated from the abdomen by the diaphragm. * عبارة عن : *muscle*.



Basic Anatomy

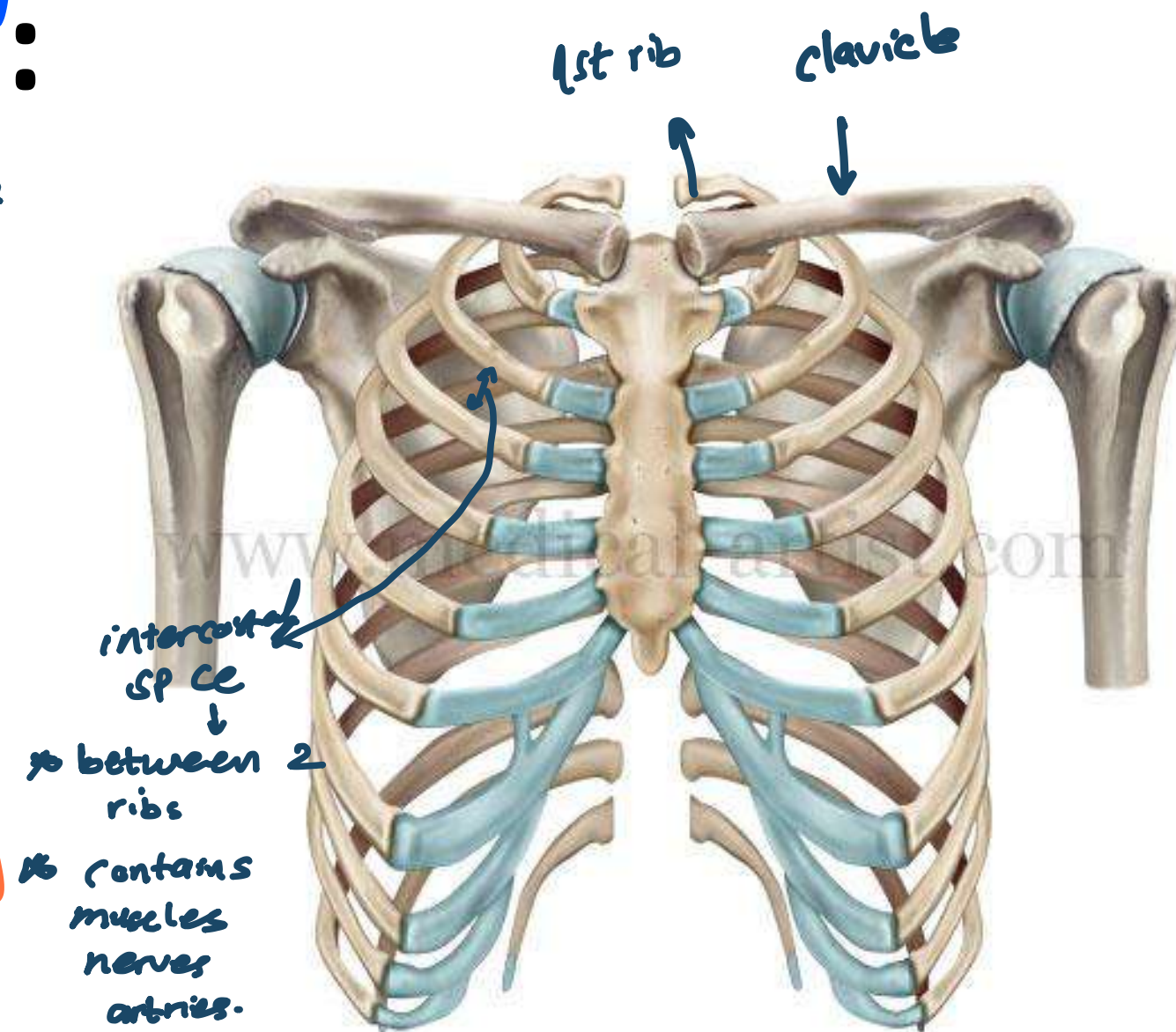
Function of thoracic cage:

➤ Protects the lungs and heart
and esophagus

➤ Affords attachment for the muscles of the thorax, upper extremity, abdomen, and back

➤ Provides the mechanical function of breathing

By intercostal muscles and the diaphragm.



Pectoralis muscle
ساعد في حركة
upper limbs.

سرطان
الشيء، يتم في تقدير ليصبح لتقسيم منا
هو تقدير الـ muscles حيث يصير الـ Block
مستغل.

Basic Anatomy

- The **cavity** of the thorax can be divided into:

➤ Median partition : called the **mediastinum**.

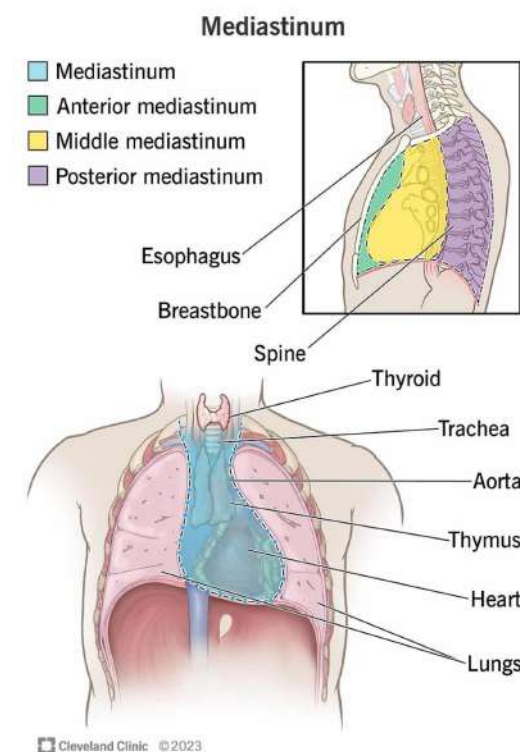
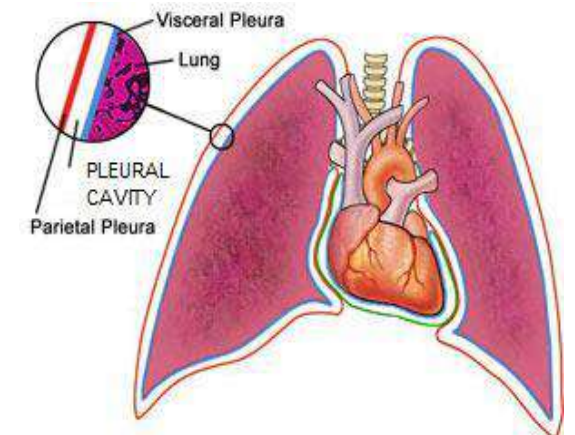
➤ Lateral partition : the **pleurae and lungs**.

- The lungs are covered by a **thin membrane** called the **visceral pleura**.

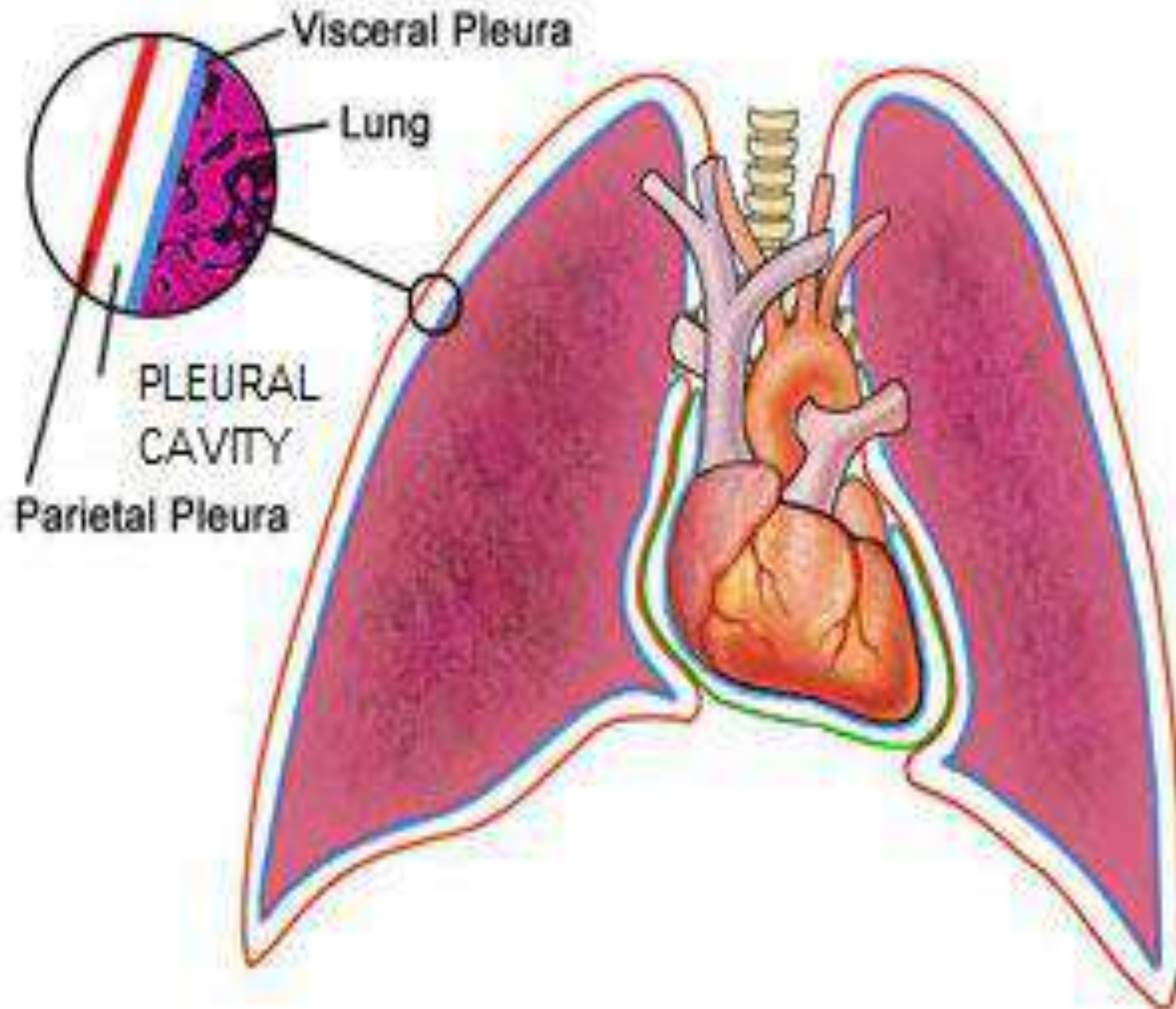
- The inner surface of the chest wall, is lined by the **parietal pleura**.

- The sacs between the two membranes called the **pleural cavities**.

يحافظ على الـ lungs, جدار جدار الـ



structure / organ ← viscera



Structure of the Thoracic Wall

- The thoracic wall is **covered by skin** and **muscles**.

- The thoracic wall is formed:**

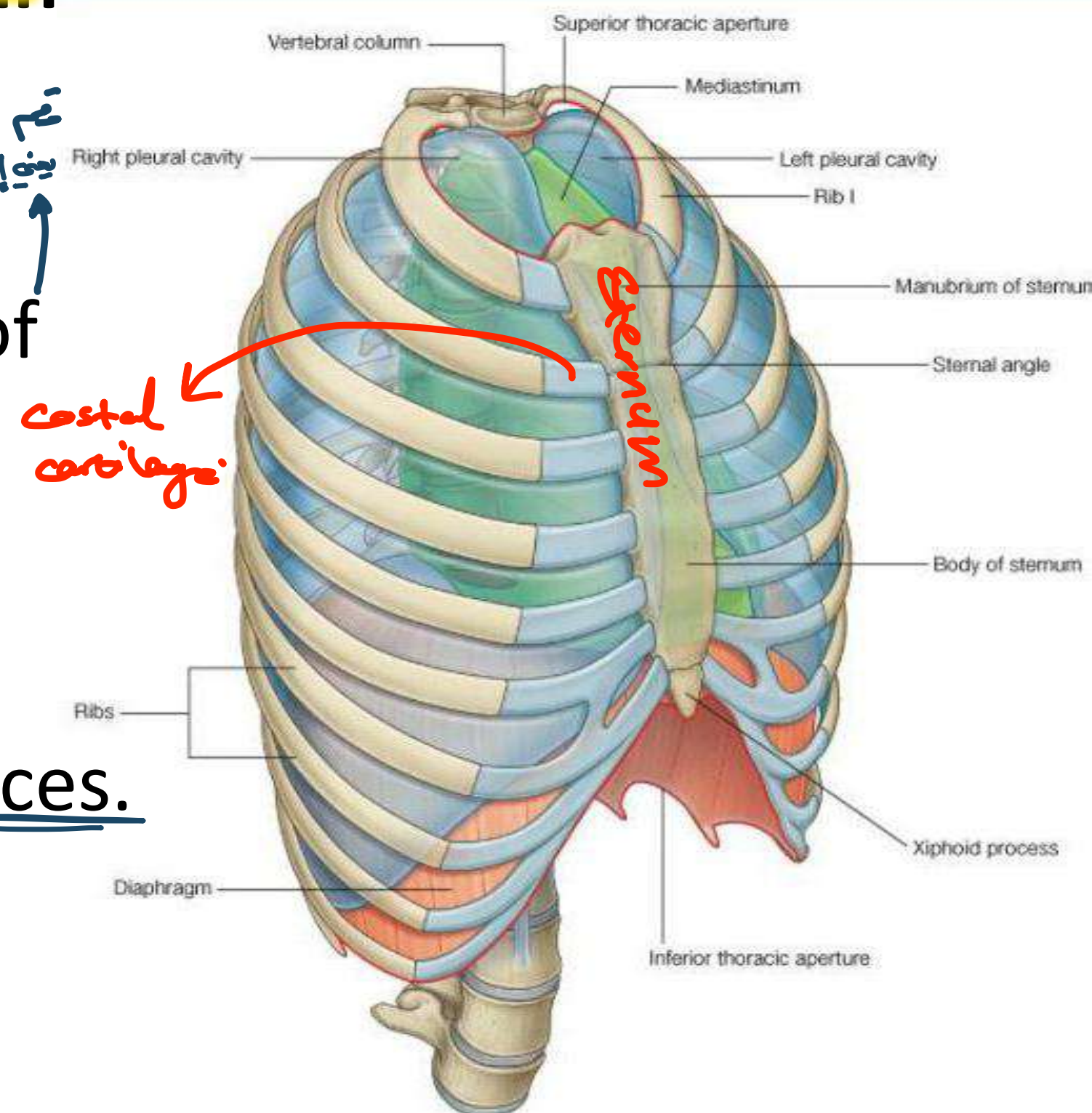
- **Posteriorly** by the thoracic part of the vertebral column.

- **Anteriorly** by sternum & costal cartilages. *hyaline*

- **laterally** by ribs & intercostal spaces.

- **Superiorly** by the suprapleural membrane.

- **Inferiorly** by the diaphragm.



Sternum

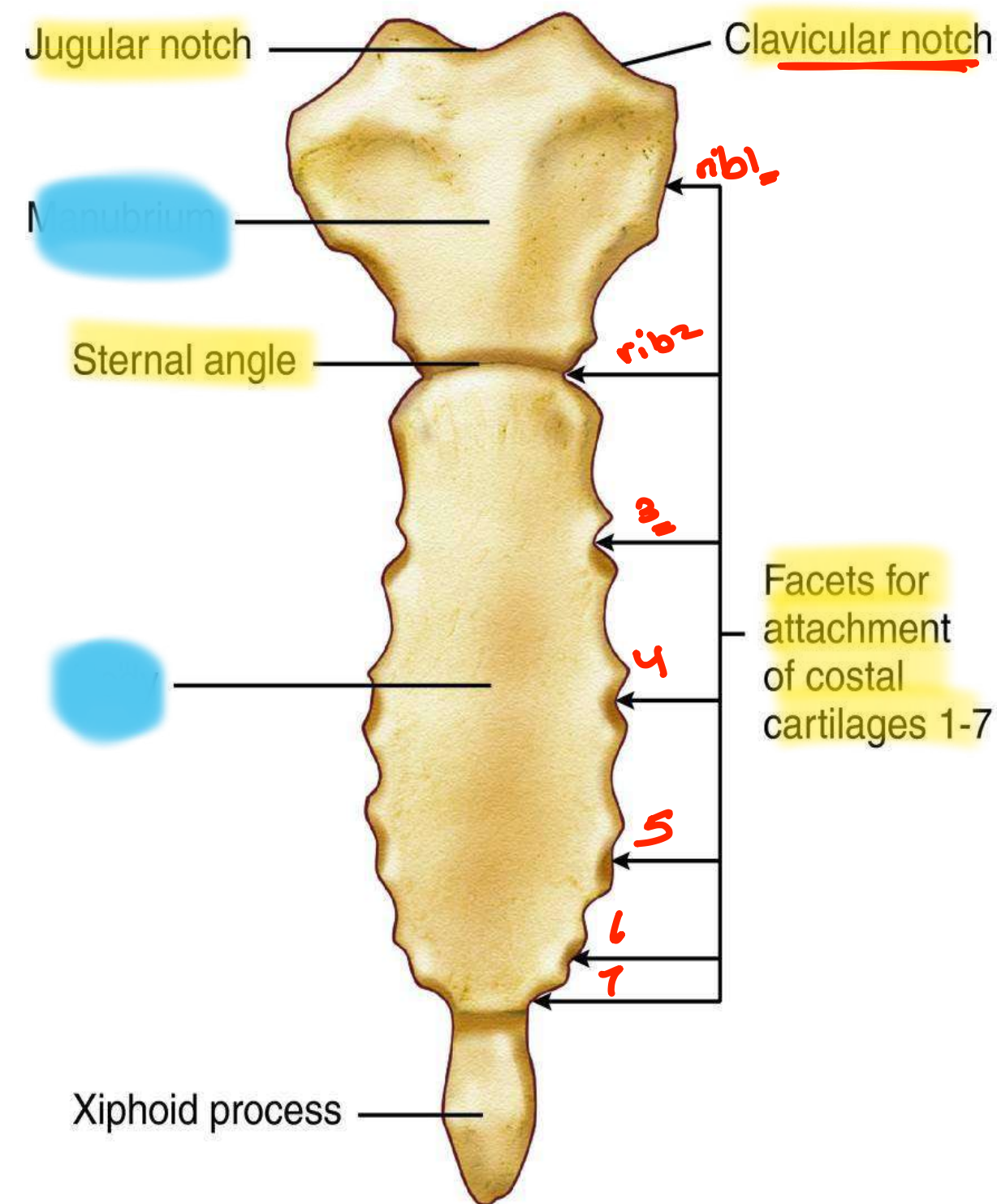
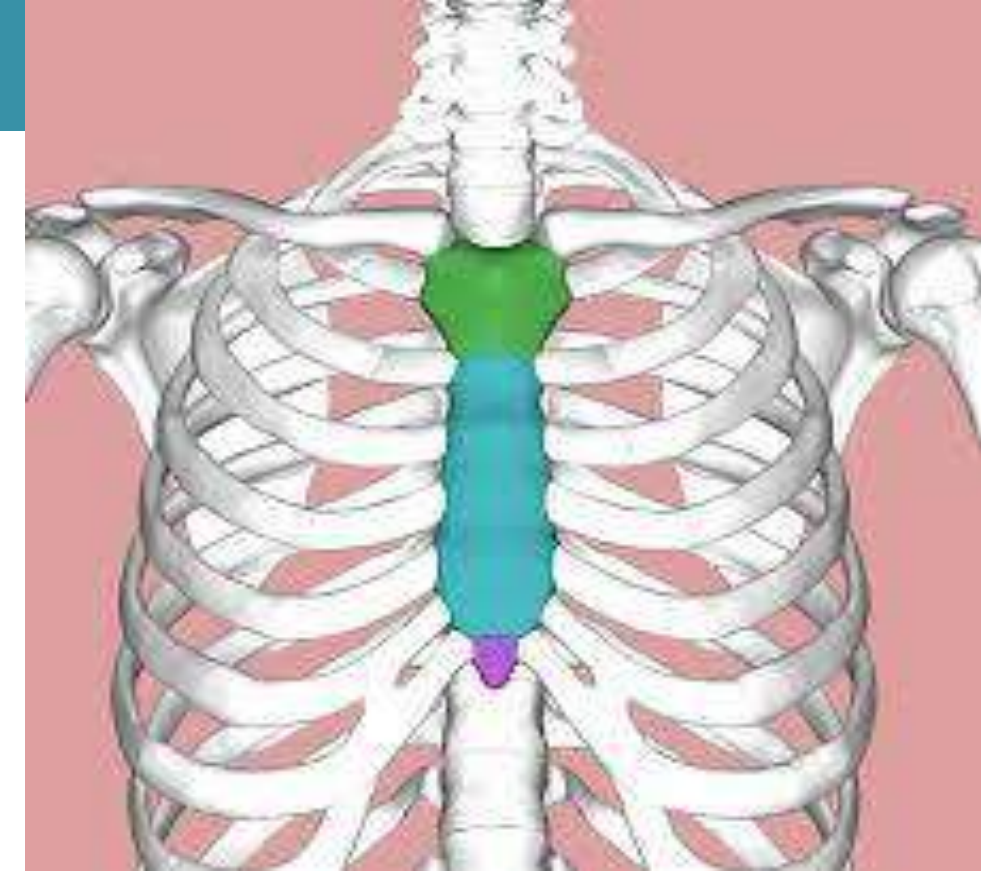
عظمه کتبہ تغیرھا irregular & long

- It is a flat bone lies in the midline of the anterior chest wall.

- Can be divided into **three parts**:

1. **Manubrium** (2 inch long) $\approx 5 \text{ cm}$
2. **Body** (4 inch long)
3. **Xiphoid process** (1 inch)

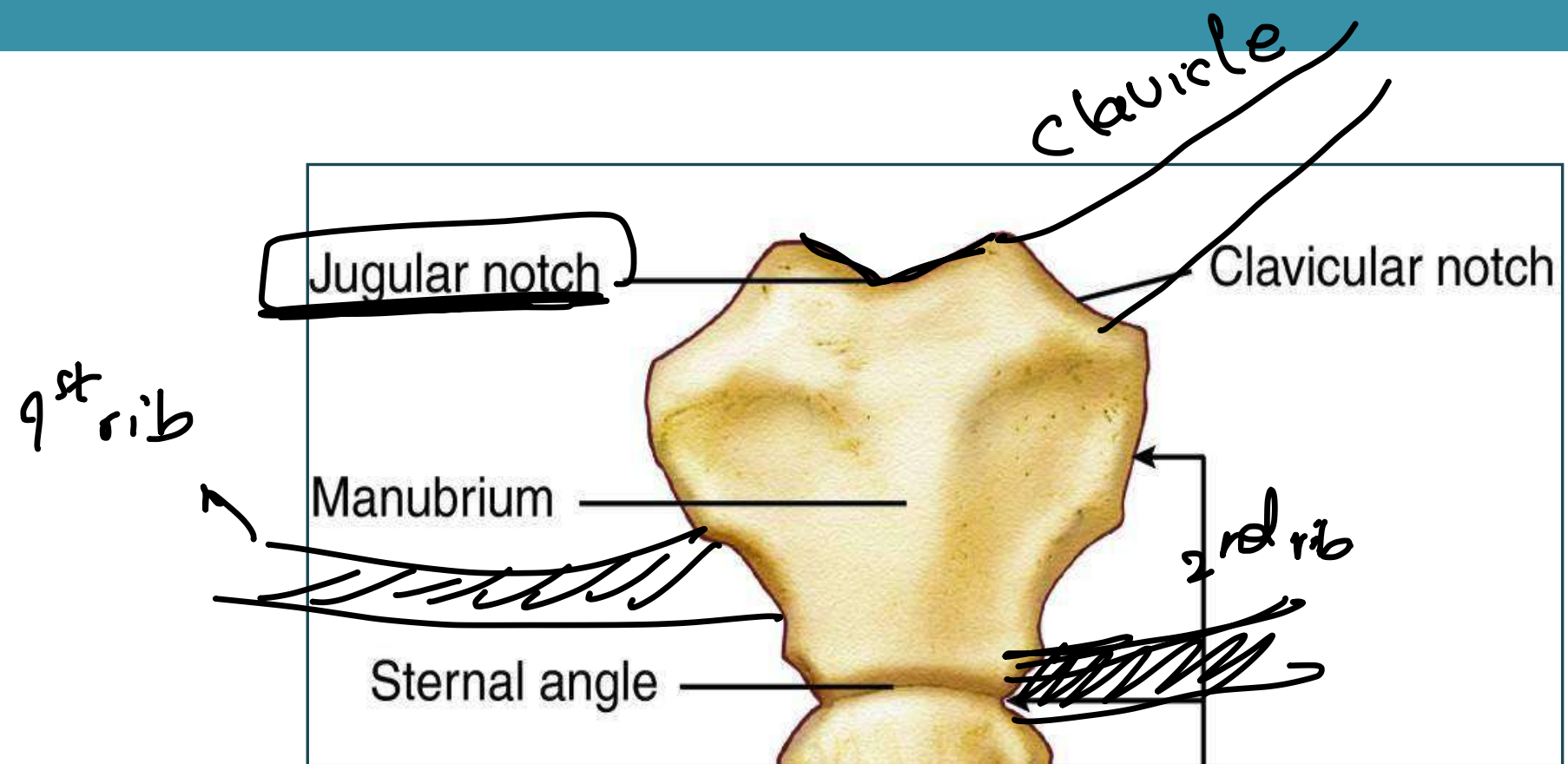
inch = 2.5 cm



Sternum

1. Manubrium:

- Is the upper part of the sternum.



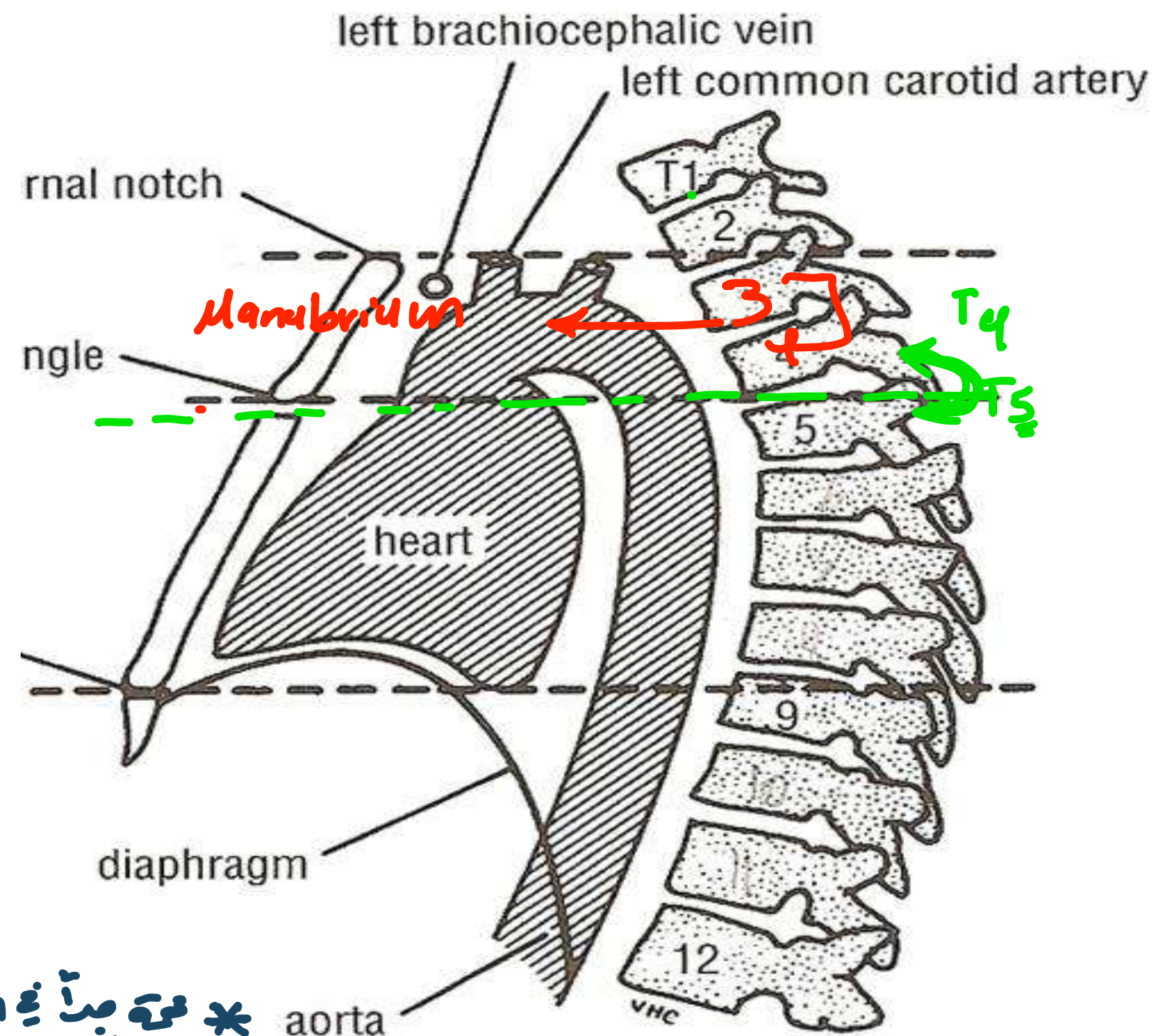
- Lies opposite the 3rd & 4th thoracic vertebrae. $T_3 = T_4$
- It articulates with:
 - The body of the sternum at the manubrio-sternal joint (Sternal Angle). *secondary cartilaginous joint*. *bone يَجُولُ ل*
 - The clavicles on each side. $\Rightarrow$ By *sternoclavicular joint*. *primary* *plane*
 - The first *primary* costal cartilage and the upper part of the second costal cartilages on each side. *synovial*
- The first rib by *primary cartilaginous joint*. *7 & 2 ~ ribs joints* *synovial joint*

Sternal Angle = Angle of Lewis

↳ = manubrio-sternal joint *not cartilaginous joint*

Sagittal

- Manubrio-sternal joint
- Easily palpated
- Opposite to T4-T5 intervertebral disc
- It marks the point at which the **costal cartilages of the second rib** articulate with the sternum



قمة مبدئية
Clinical

نقطة مفصلية
intercostal spaces.

كيفية تحديد

*في منطقة الصدر (Chest) نجد sternum ← أنزلة
منطقة palpated (ملموسة) هادياً إلى angle of Lewis
التي على مستوى مفصلية موجودة الـ 2nd rib
1st*

Sternal Angle = Angle of Lewis

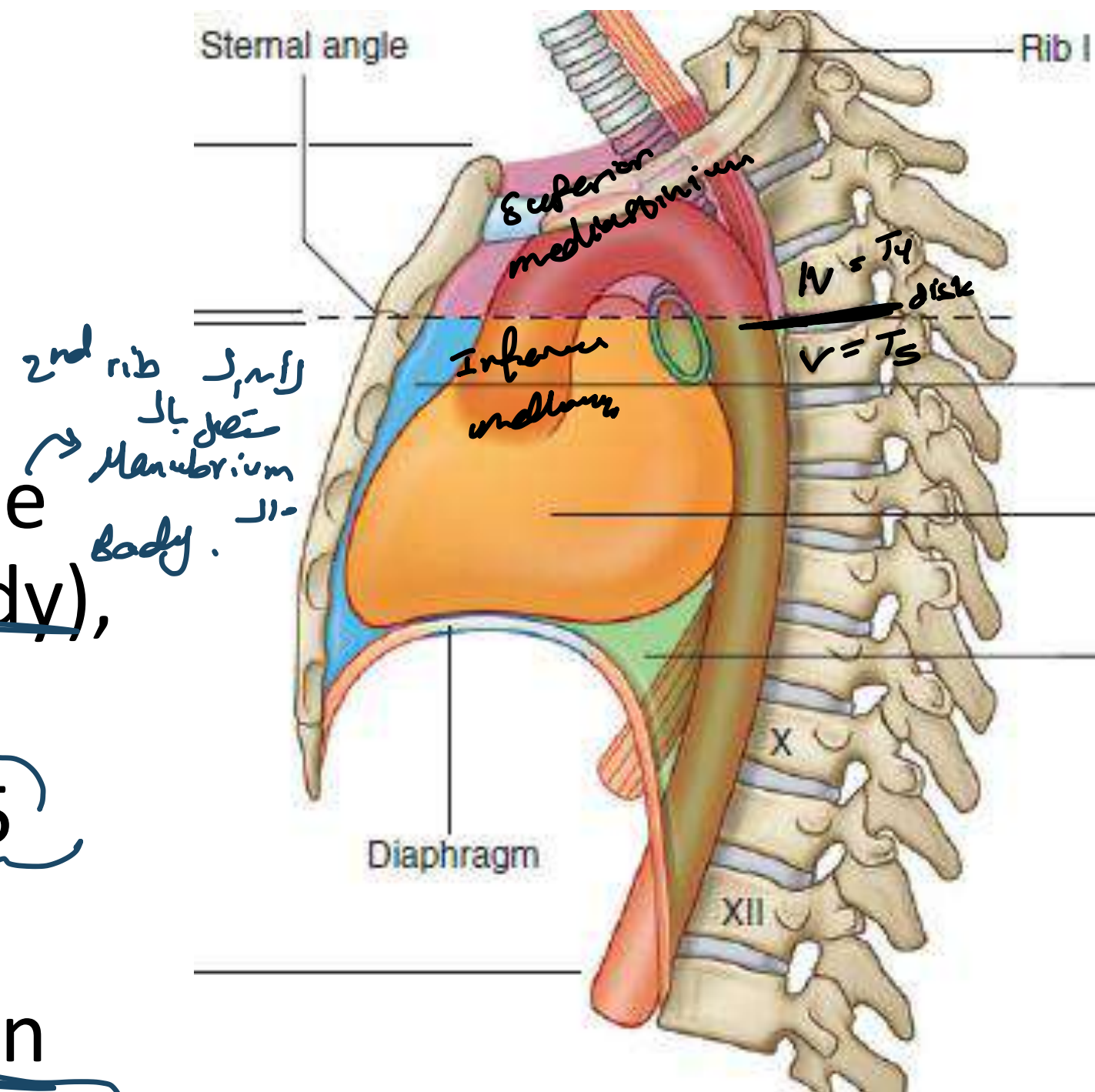
- It is an important landmark because it marks :

(1) the manubriosternal joint (a symphyseal joint), *"secondary cartilages"*

(2) the attachment points of the second costal cartilages (thus, these attach to both manubrium and body),

(3) a horizontal line that typically projects posteriorly onto the T4/T5 intervertebral disc.

(4) the plane of separation between the superior and inferior mediastina.



Sternum

2. Body of the sternum:

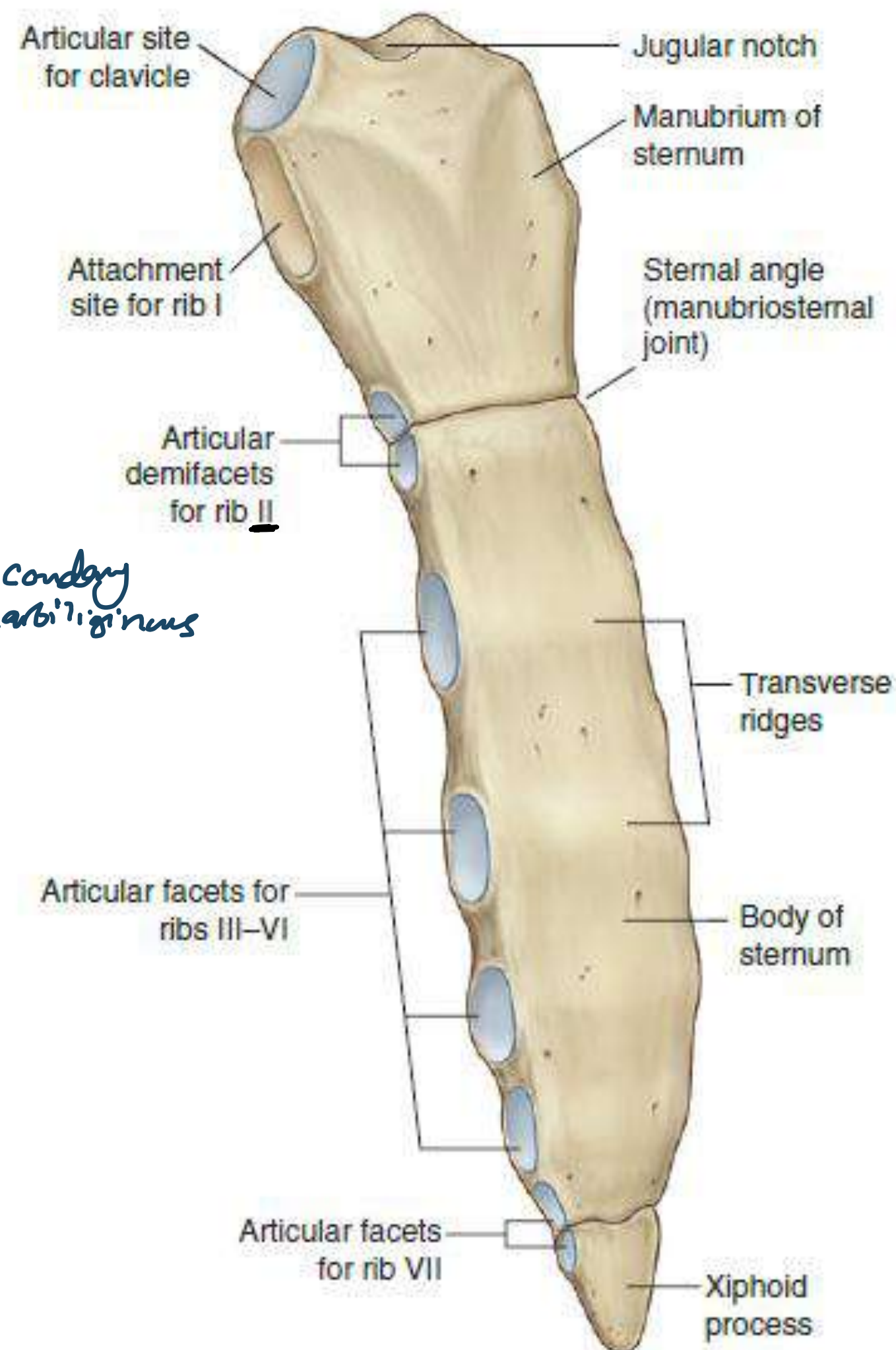
➤ Articulates:

- **Above** with the manubrium at the **manubriosternal joint**. *secondary cartilagenous*

- **Below** with the xiphoid process at the **xiphisternal joint**. *Cartilage of xiphoid* *Primary cartilaginous joint*

- **On each side** with the **2nd – 7th costal cartilages**.

↓
Synovial joints



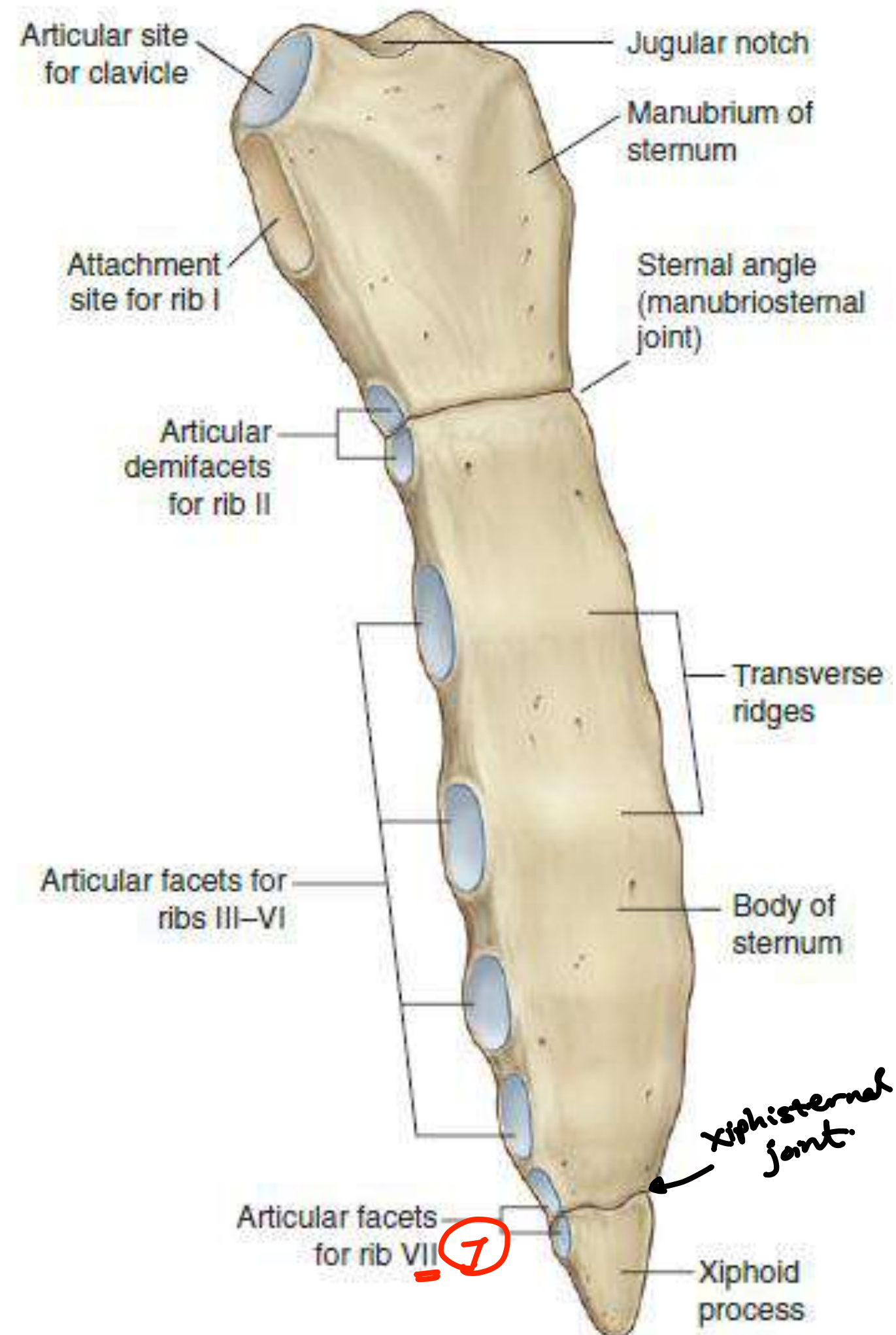
Sternum

3. Xiphoid process:

• Thin plate of cartilage that ossified at its proximal end during adult life.

• No ribs or costal cartilages attachment.

• The xiphisternal joint lies opposite the body of the 9th thoracic vertebra



CLINICAL : Sternum Puncture

Specimen of bone marrow can be taken from sternum.

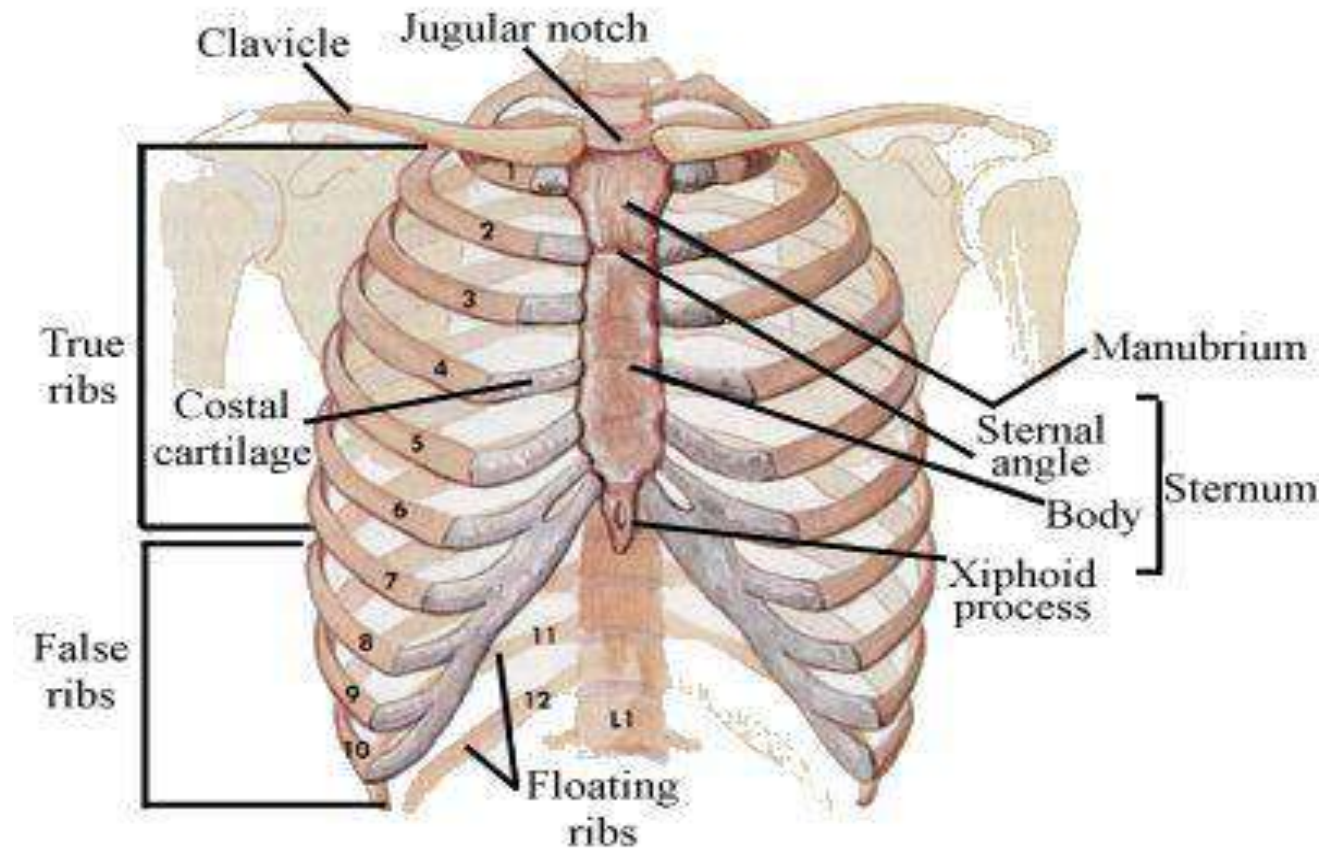
عينة

- It lies Subcutaneously.
- تحت الجلد.

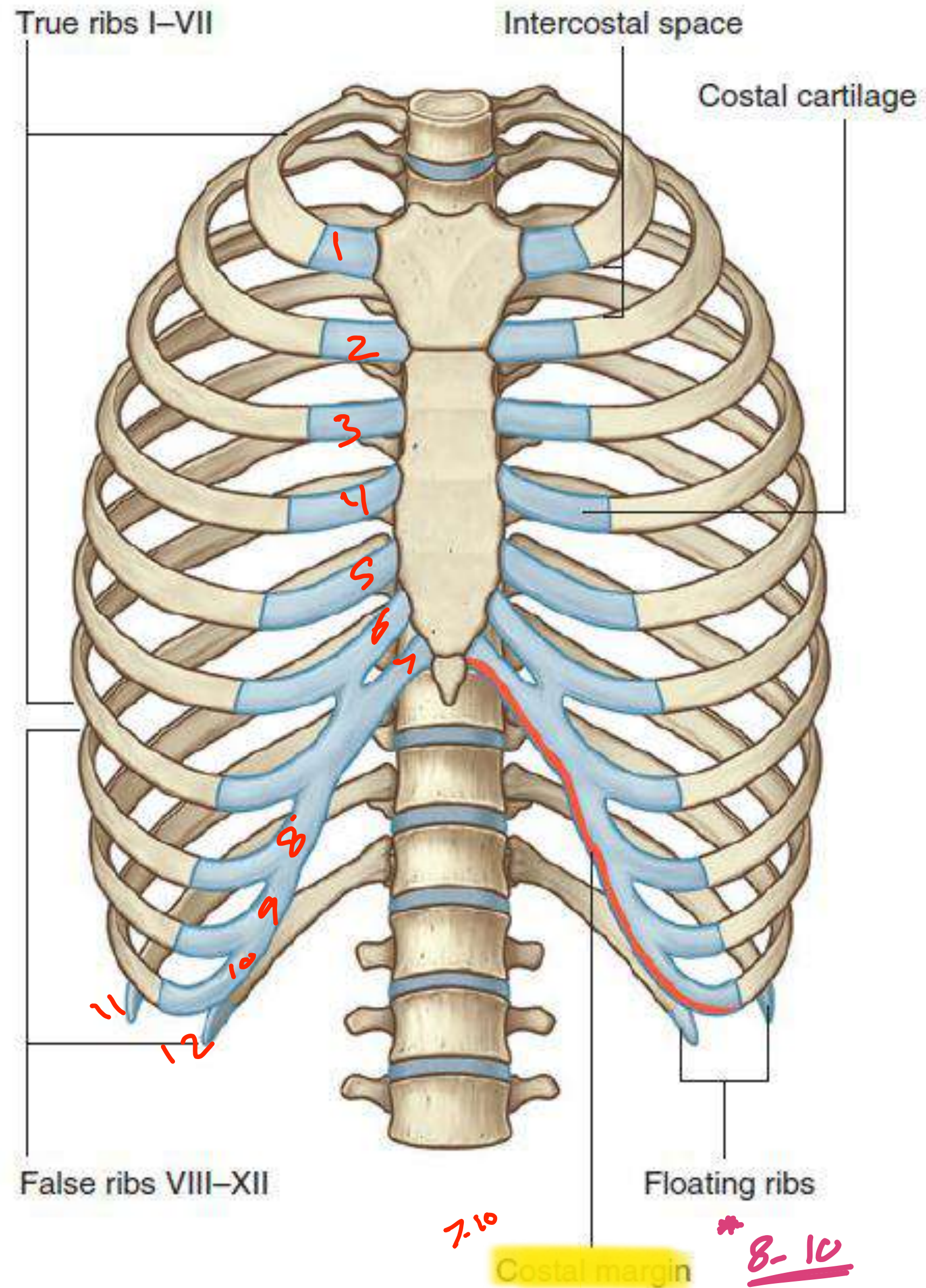


Ribs

- There are **12 pairs** of ribs.
- All of them are **attached to the thoracic vertebrae.** $T_1 \rightarrow T_{12}$
- Divided into three categories:
 - **True ribs**: (1-7) are attached anteriorly **to the sternum** by their **costal cartilages**.
 - **False ribs**: the 8th, 9th, and 10th pairs of ribs are attached anteriorly to each other and to the **7th rib** by means of their **costal cartilages**.
 - **Floating ribs**: The 11th and 12th pairs have **NO** anterior attachment.



Ribs



Typical & Atypical Ribs

3, 4, 5, 6, 7, 8, 9.

- **Typical ribs** are 3 → 9,

are made up of 2 articular facets, a superior costal facet, and an inferior costal facet.

Head of the rib

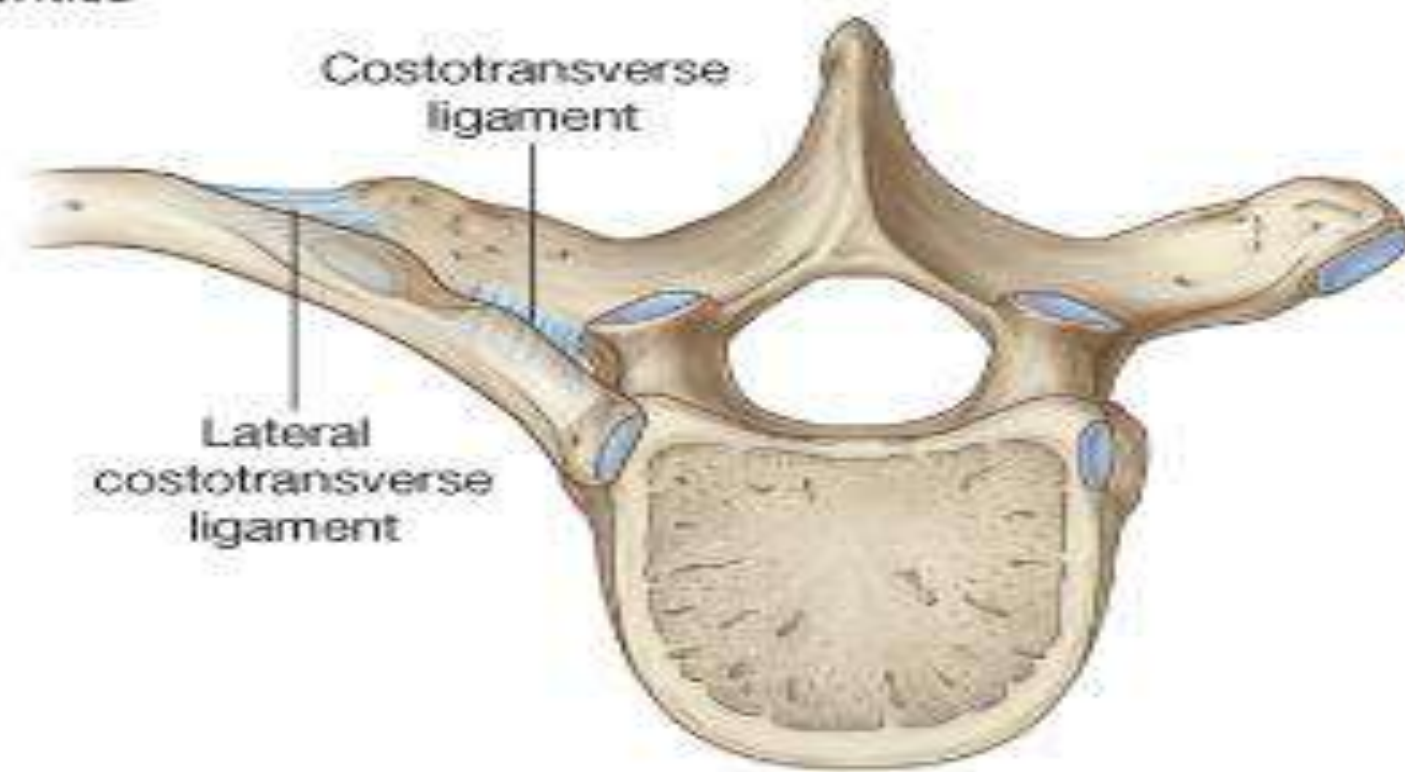
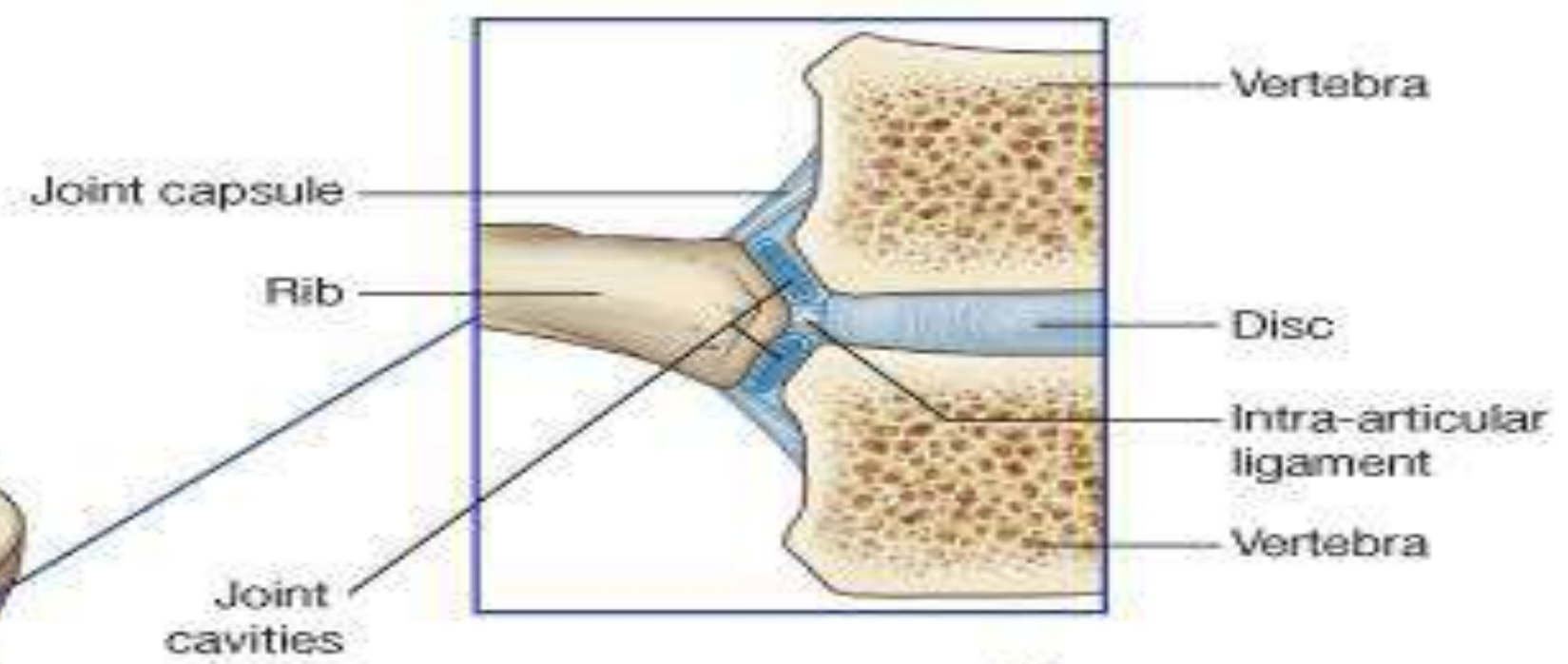
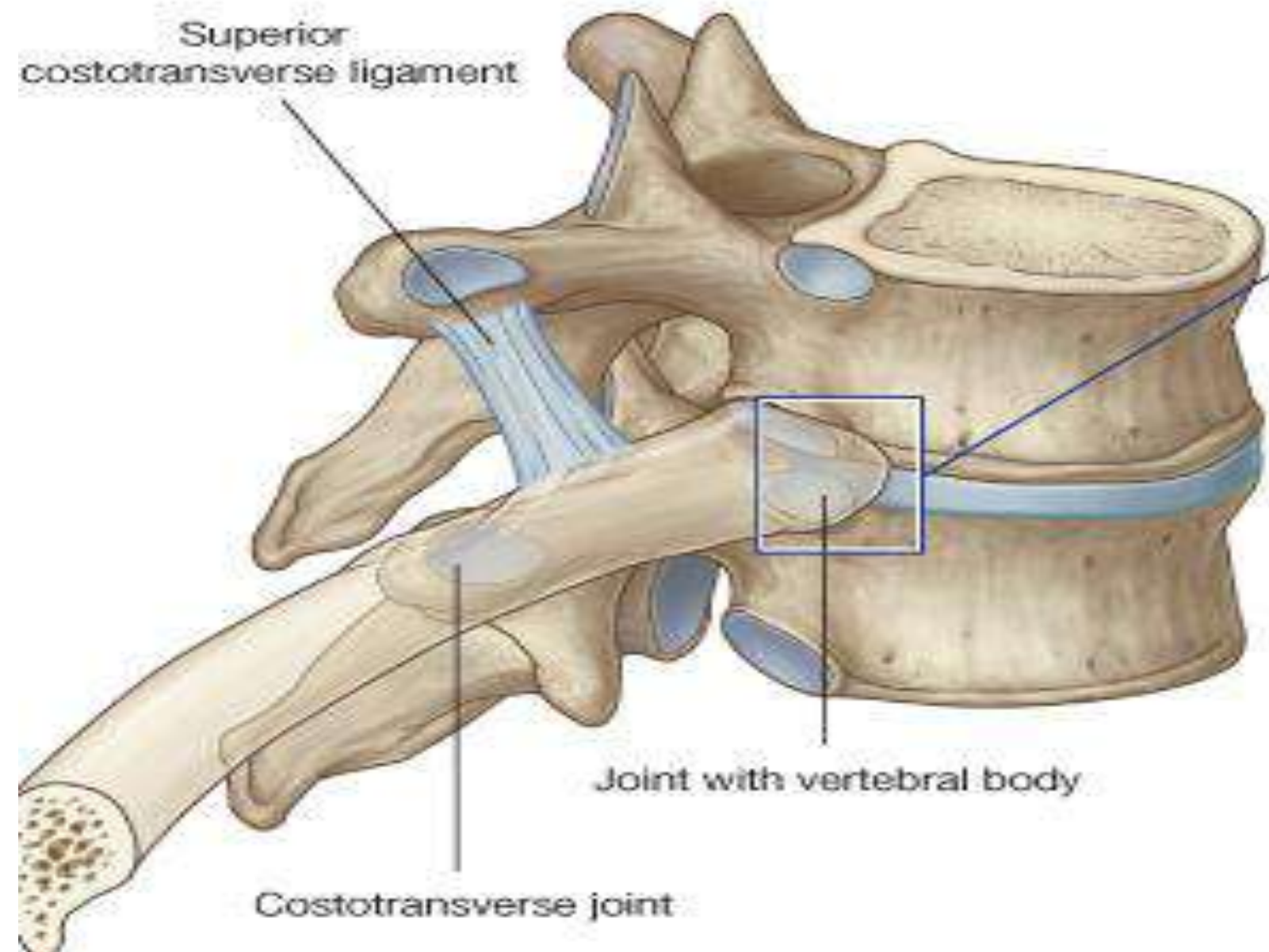
→ articulates with
Body of vertebra above
↓
By costovertebral joint

↳ articulates with Body
vertebra corresponding
By costovertebral joint

- **Atypical ribs** are 1, 2, 10, 11, and 12,

they are atypical because they are only articulate
with their own vertebra via one FULL facet.

↓
Corresponding

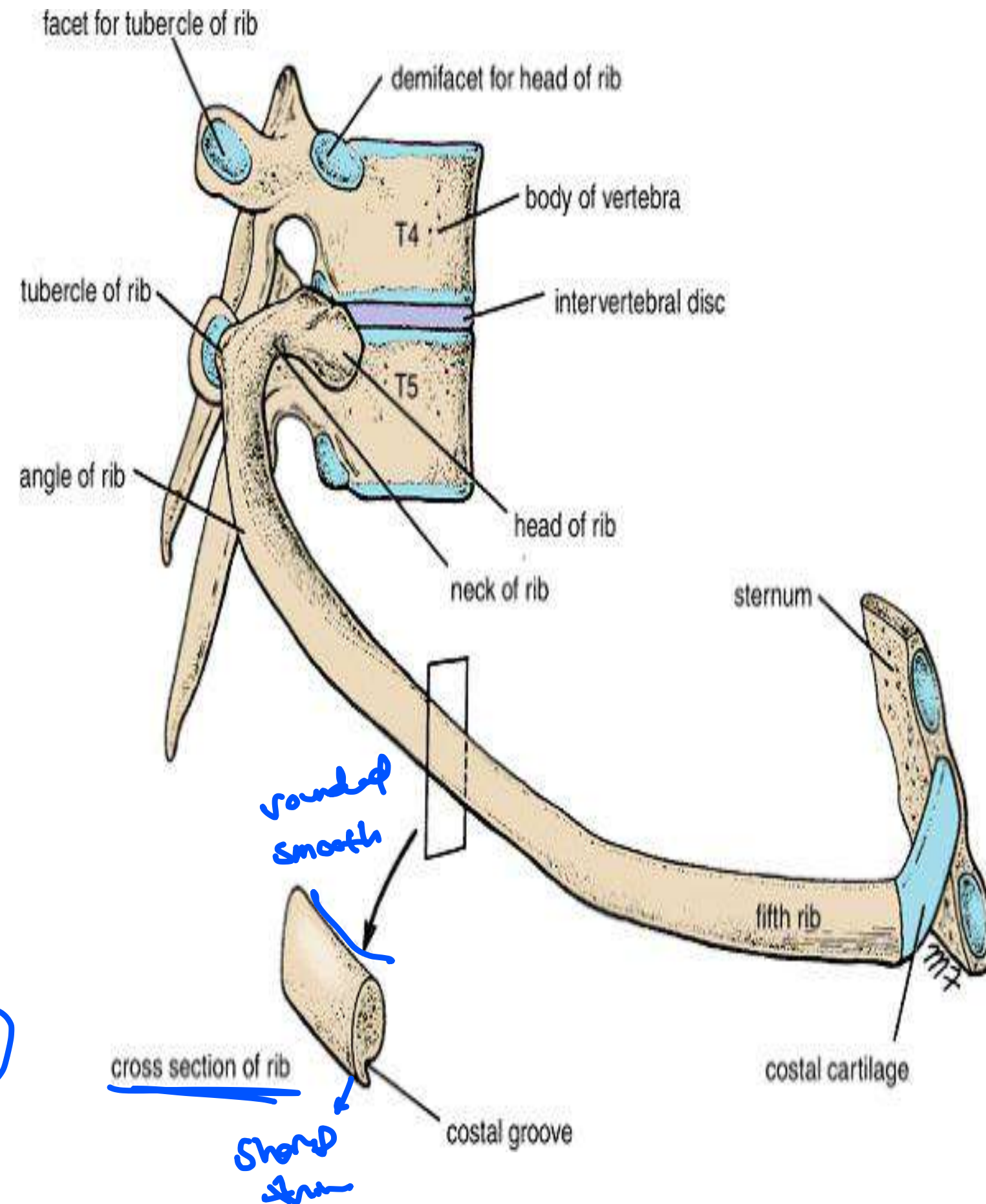


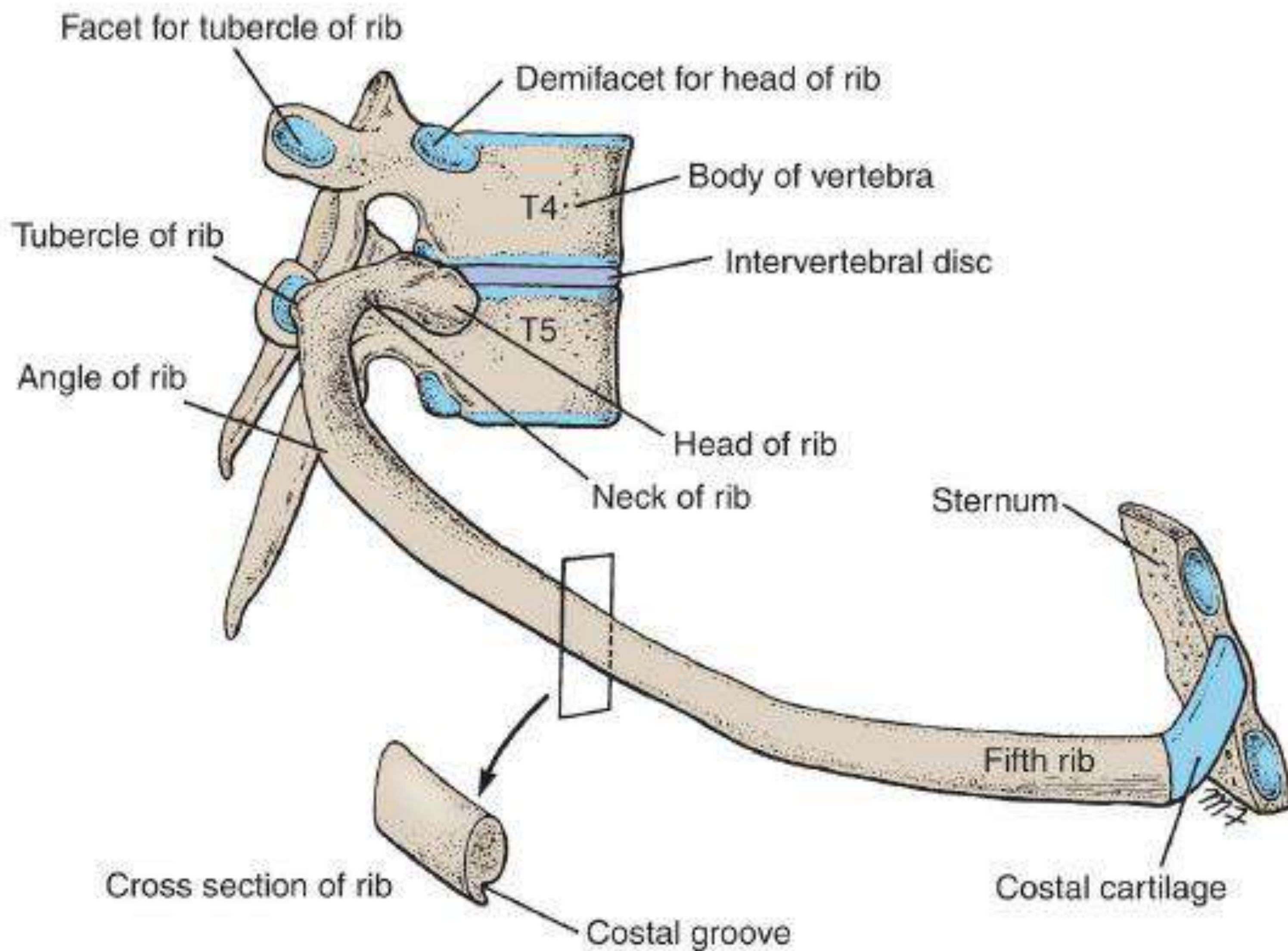
Typical Rib

ملفوف

- A long, twisted, flat bone.
- Superior border is rounded & smooth.
- Inferior border is sharp & thin.

- The inferior border overhangs and forms the costal groove, which accommodates the intercostal vessels and nerve.





Typical Rib

- The **anterior end** of each rib is attached to the corresponding costal cartilage.
- The **posterior end** is higher than anterior end , **except** for (1-2- 11-12) rib run Downwards , Costal Cartilage upward.

پاسکونٹا سے نچر د لے لیا
انہی end سے ہے .

A rib has a :

head , neck , tubercle , body , angle , costal groove.

Typical Rib

~ 15, tubercle, 1, is faces ~ 15, 10
typical - rib 11

1. Head: the posterior end with **2** articular facets

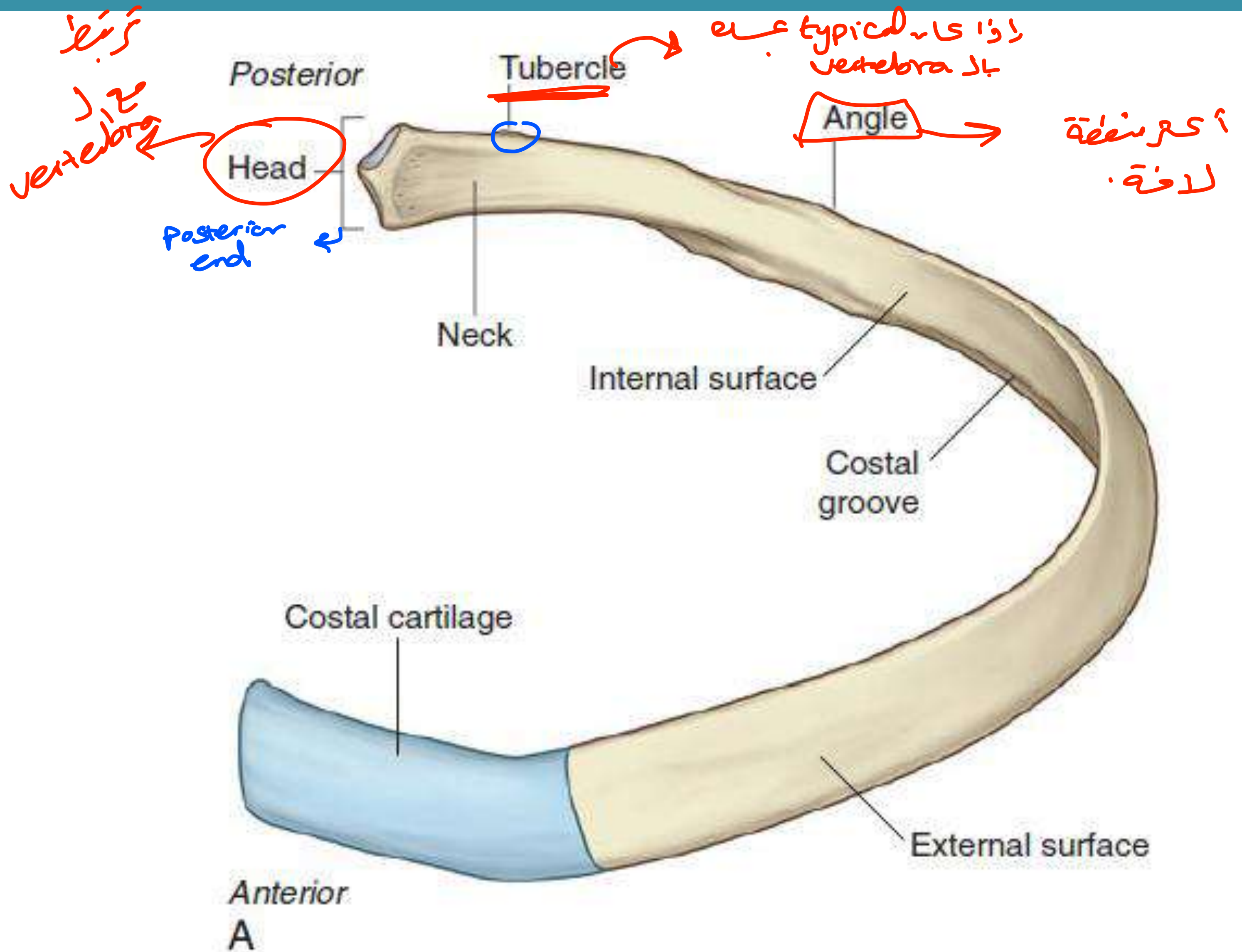
2. Neck: connects the head with the tubercle.

3. Tubercle: is a prominence on the outer surface of the rib at the junction of the neck with the shaft, has a facet for articulation with the transverse process of corresponding vertebra

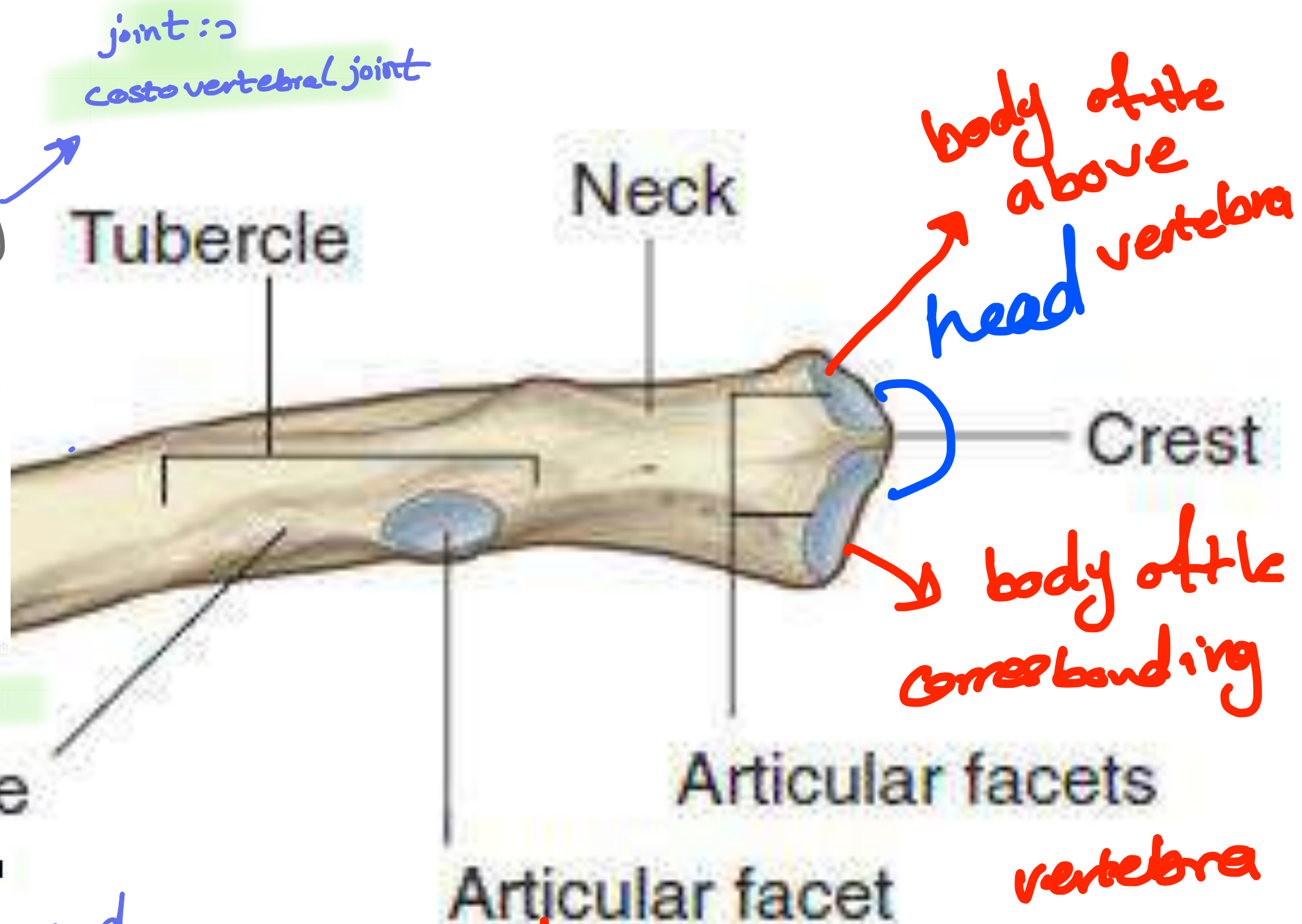
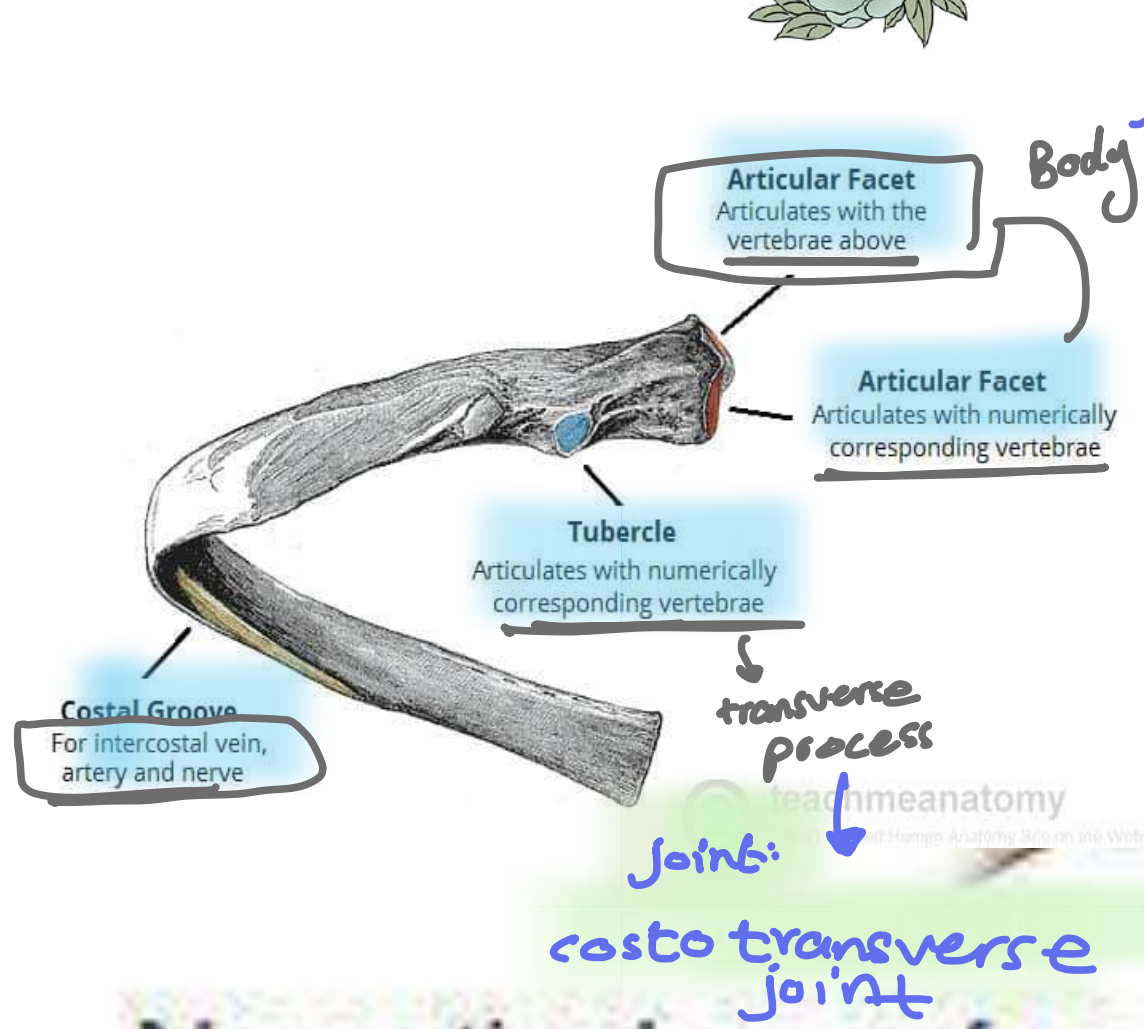
By costovertebral joint.

4. Shaft (Body): is thin, flattened and twisted

5. Angle : is where the shaft bends sharply forward

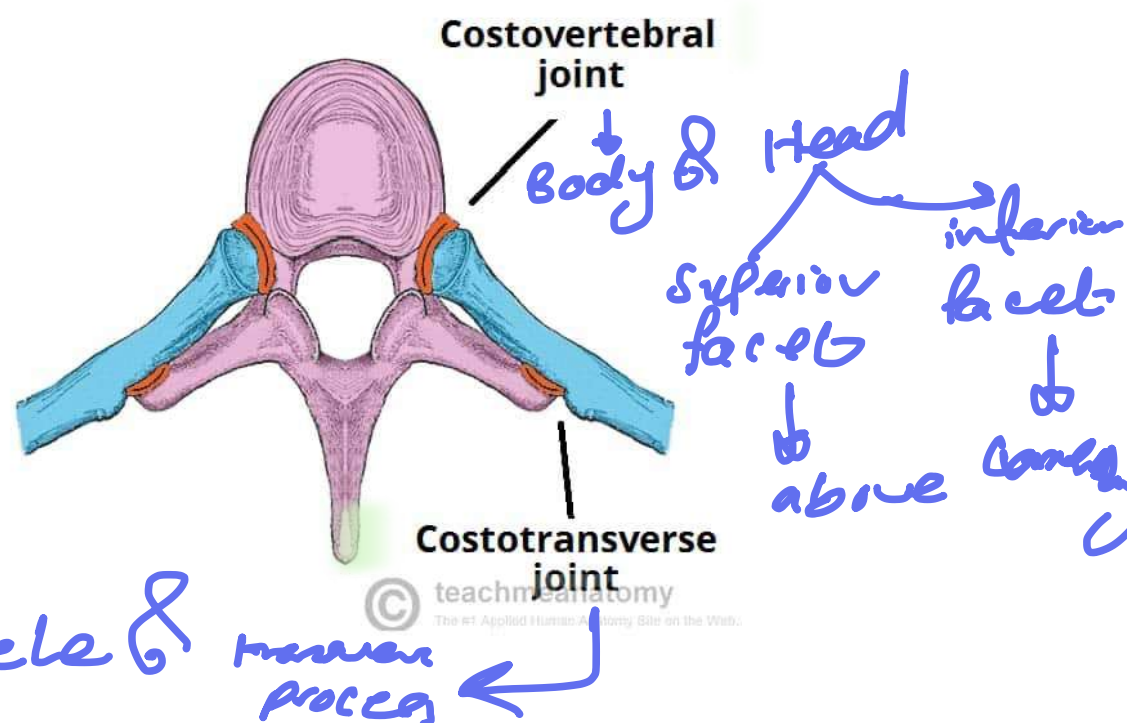


Rib Articulate



Nonarticular surface

B



transverse process of the corresponding vertebra.

Special Features

- ♦ Ribs and costal cartilage increase in length 1-7.

Rib 7 is the longest rib.

- ♦ Transverse diameter of thorax increase 1-8.

یعنی اکثر طرز خاص (طالع) لبر

Rib 8 has greatest lateral projection.

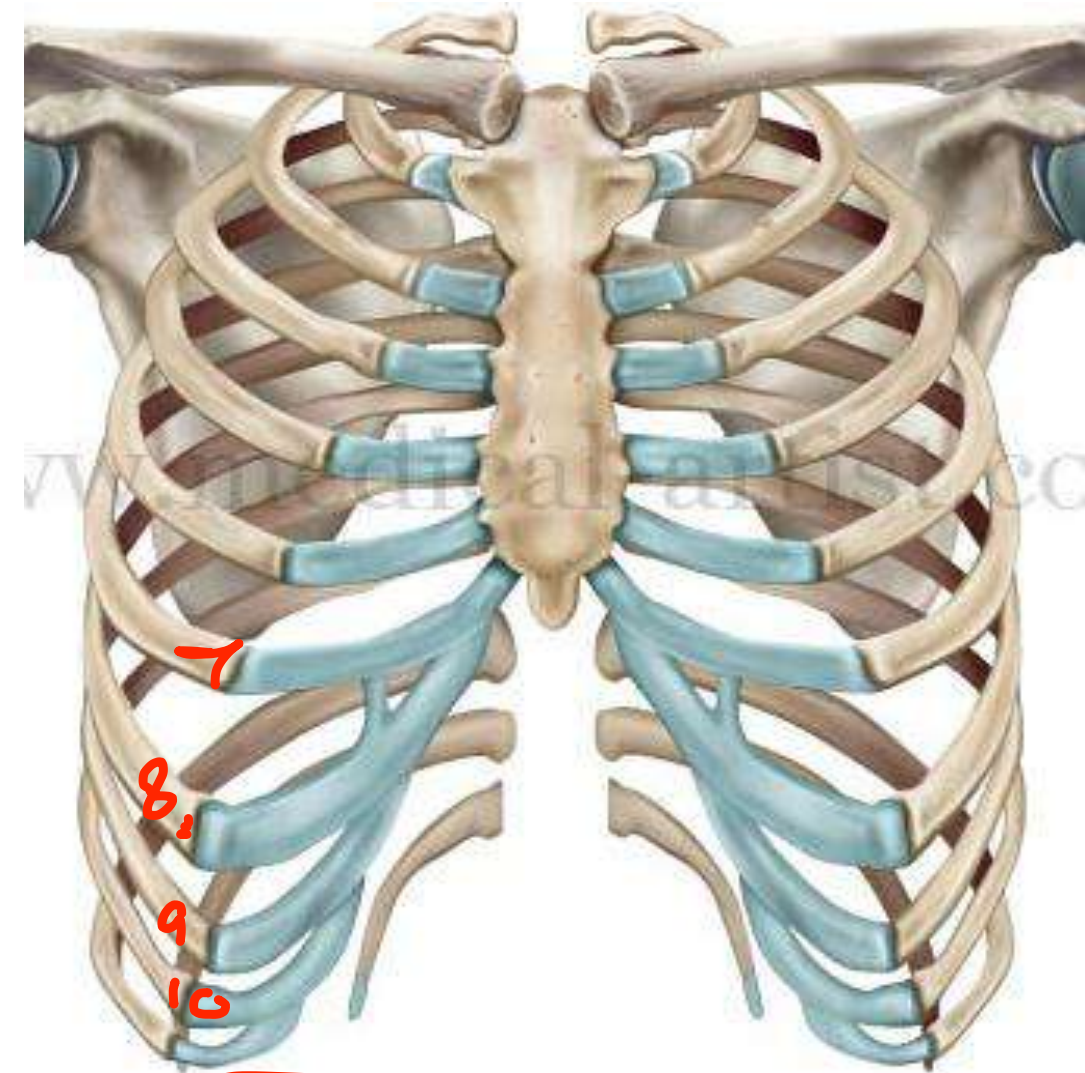
- ♦ Ribs increase in obliquity 1-9

Rib 9 is most oblique.

- ♦ Cartilage of rib 10 is lowest point when palpated from front

اکثر طرز نقد تلمه سکت

- ♦ Tip of 11th cartilage is lowest cartilage.



First Rib

Atypical

الأضغرة

- This rib is small and flattened from above downward.
- The first rib is important clinically because of its close relationship:

Lower trunk

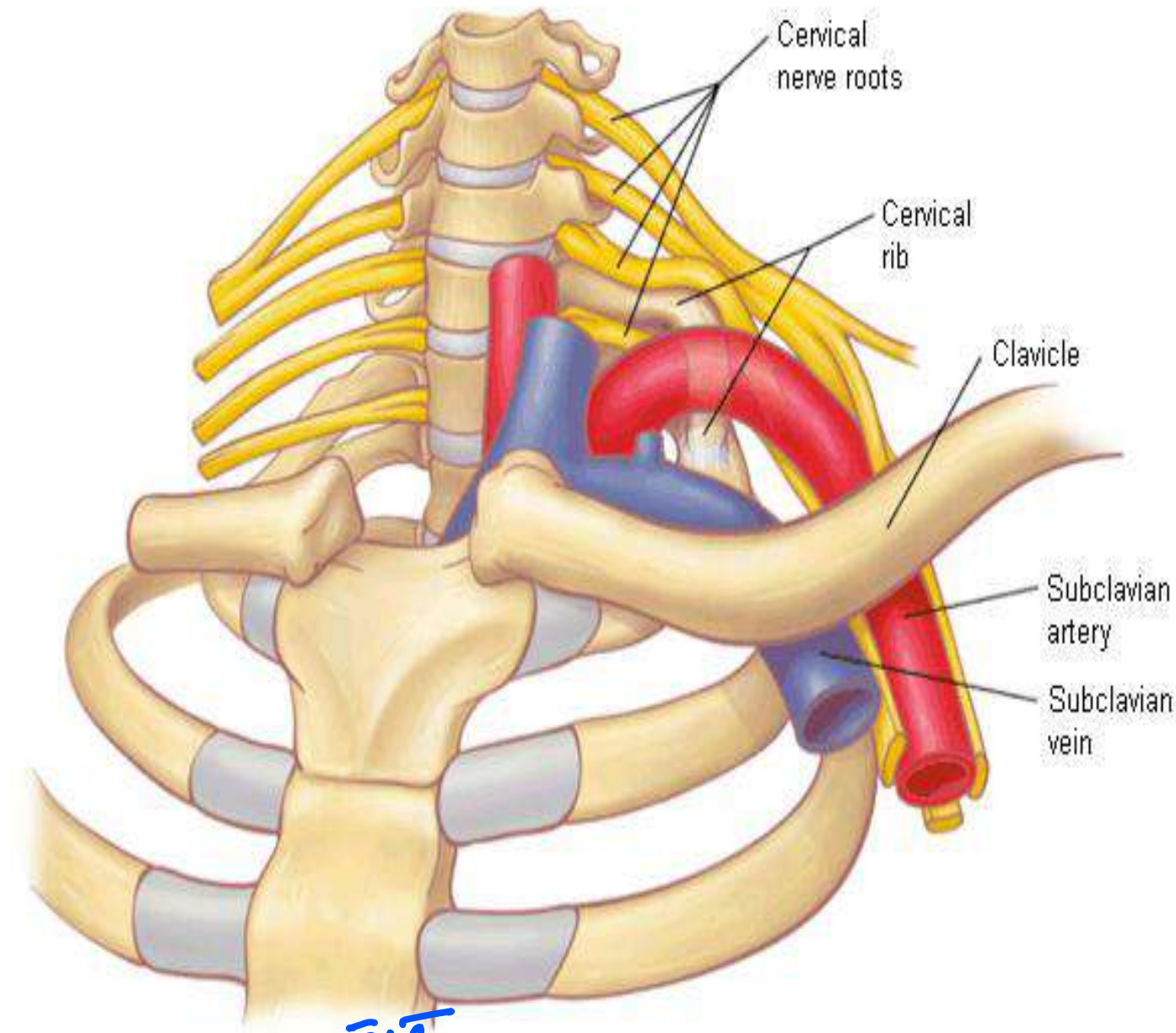
arm يعني

➤ To the lower nerves of the brachial plexus.

عنق

➤ The main vessels to the arm, namely, the subclavian artery and vein.

1st rib ← تحت clavicle كما ضام



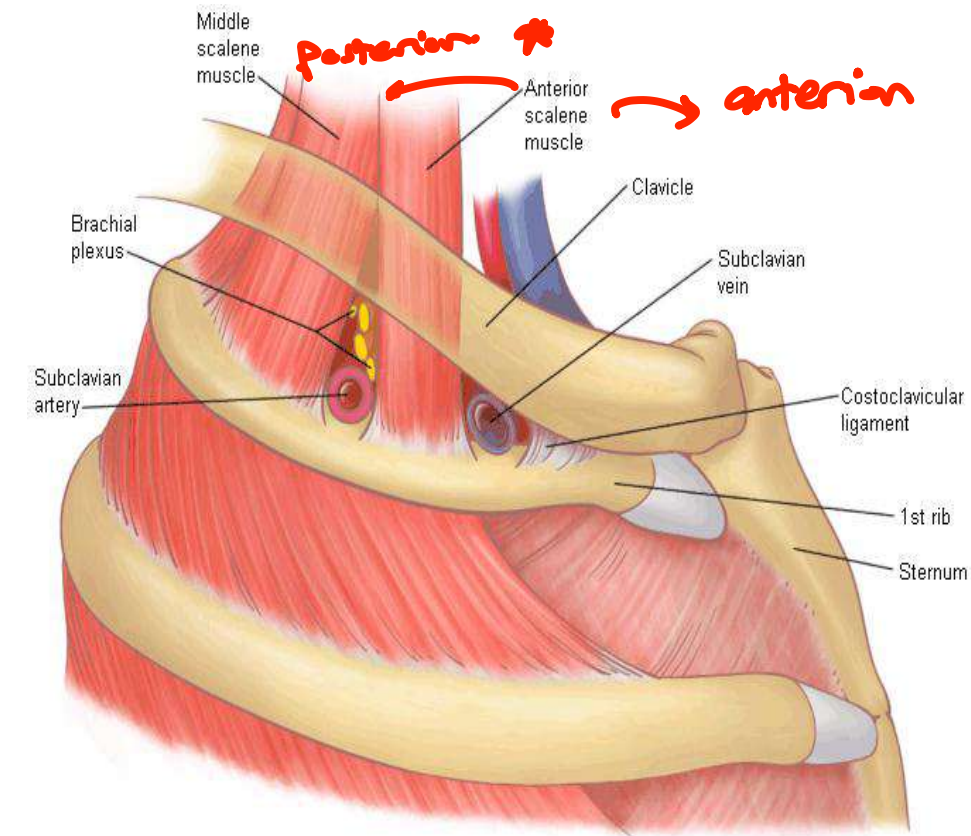
كجبة الأعصاب إلى طاعة
عنق cervical

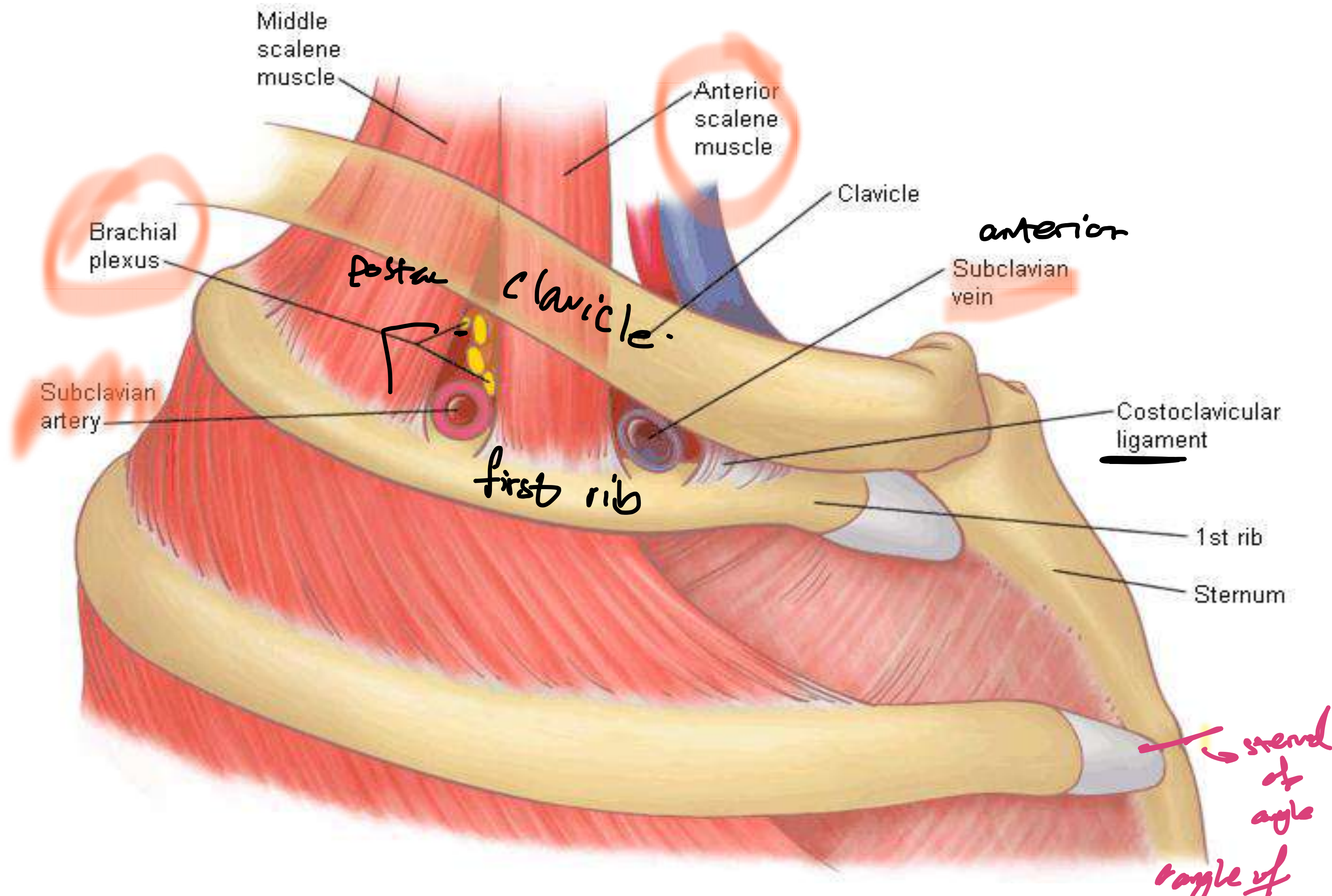
عنق upper limb
Brachial plexus

العضود منق

First Rib

- The **scalenus anterior** muscle is attached to its upper surface and inner border.
- The **subclavian vein** crosses the rib anterior to the scalenus anterior muscle.
- The **subclavian artery** and the lower trunk of the brachial plexus cross the rib posterior to the scalenus anterior muscle.



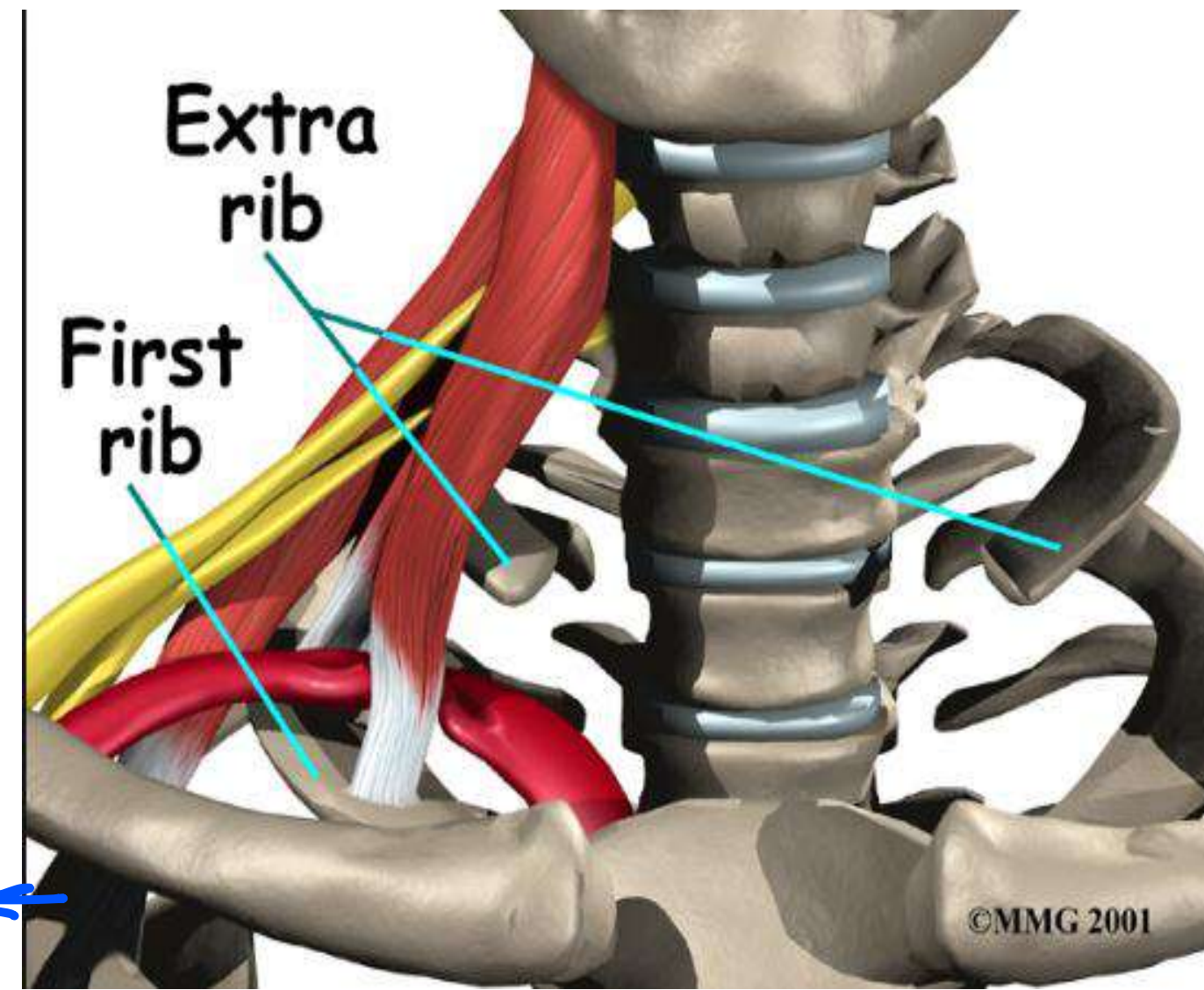


CLINICAL: Cervical Rib → 4P normal

- Extra rib arise from C7 vertebra
- Present in ~0.5% of people

1st rib narrow في منطقة clavicle

Complications: → cervical



- Pressure on Nerves & Arteries supplying upper limb.

Tingling & Numbness → Partial paralysis

شل جزئي
↓
بتقع إكستريميٲ

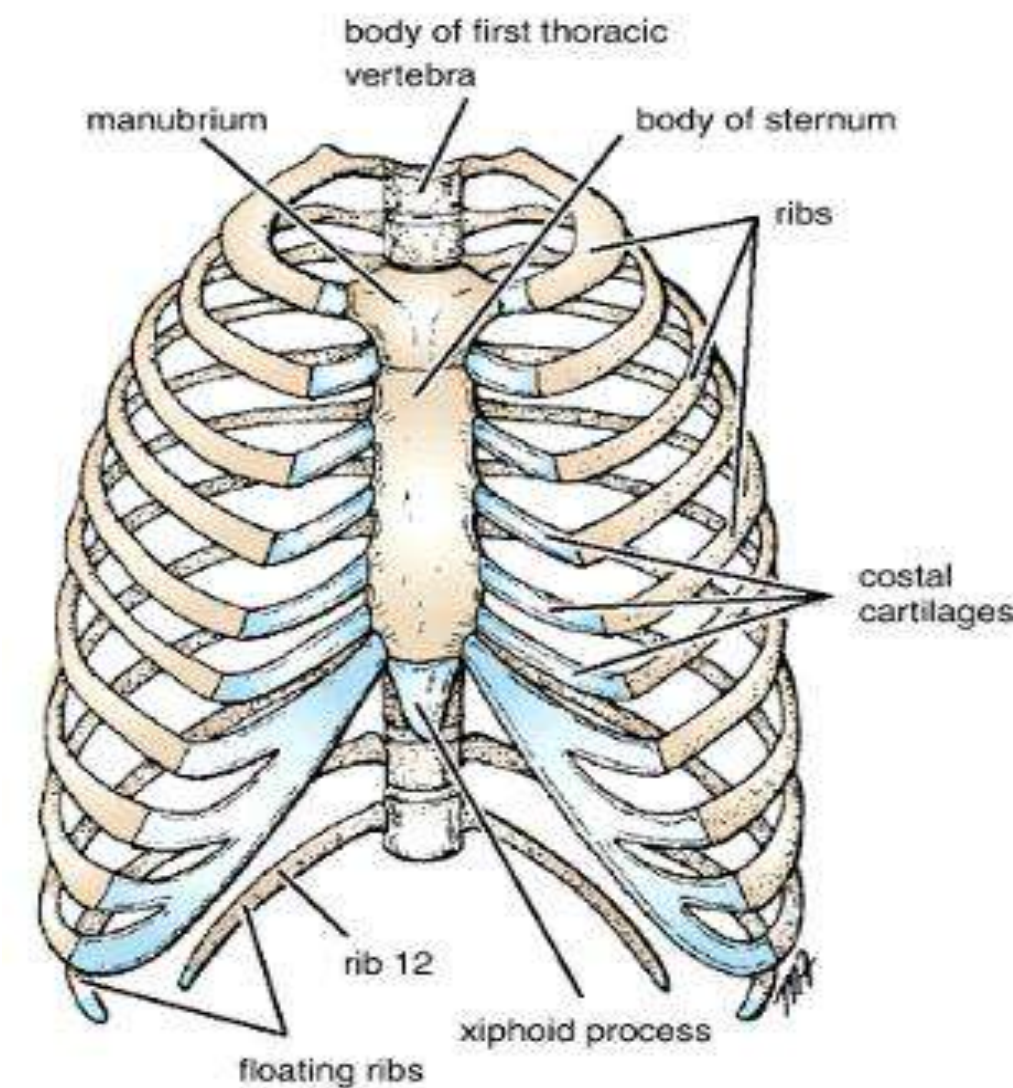
Ischemic muscle pain (pallor-coldness).

لم يـ مانع دم يصل لـ الشرايين الصغيرة

Costal Cartilages

- They are bars of cartilage connecting:
 - The upper seven ribs to the lateral edge of the sternum.
 - The 8th, 9th, and 10th ribs to the cartilage immediately above.
- The cartilages of the 11th and 12th ribs end in the abdominal musculature.
- The costal cartilages contribute significantly to the elasticity and mobility of the thoracic walls.

المرنة ، مرونة



Openings of the Thorax

فتحة

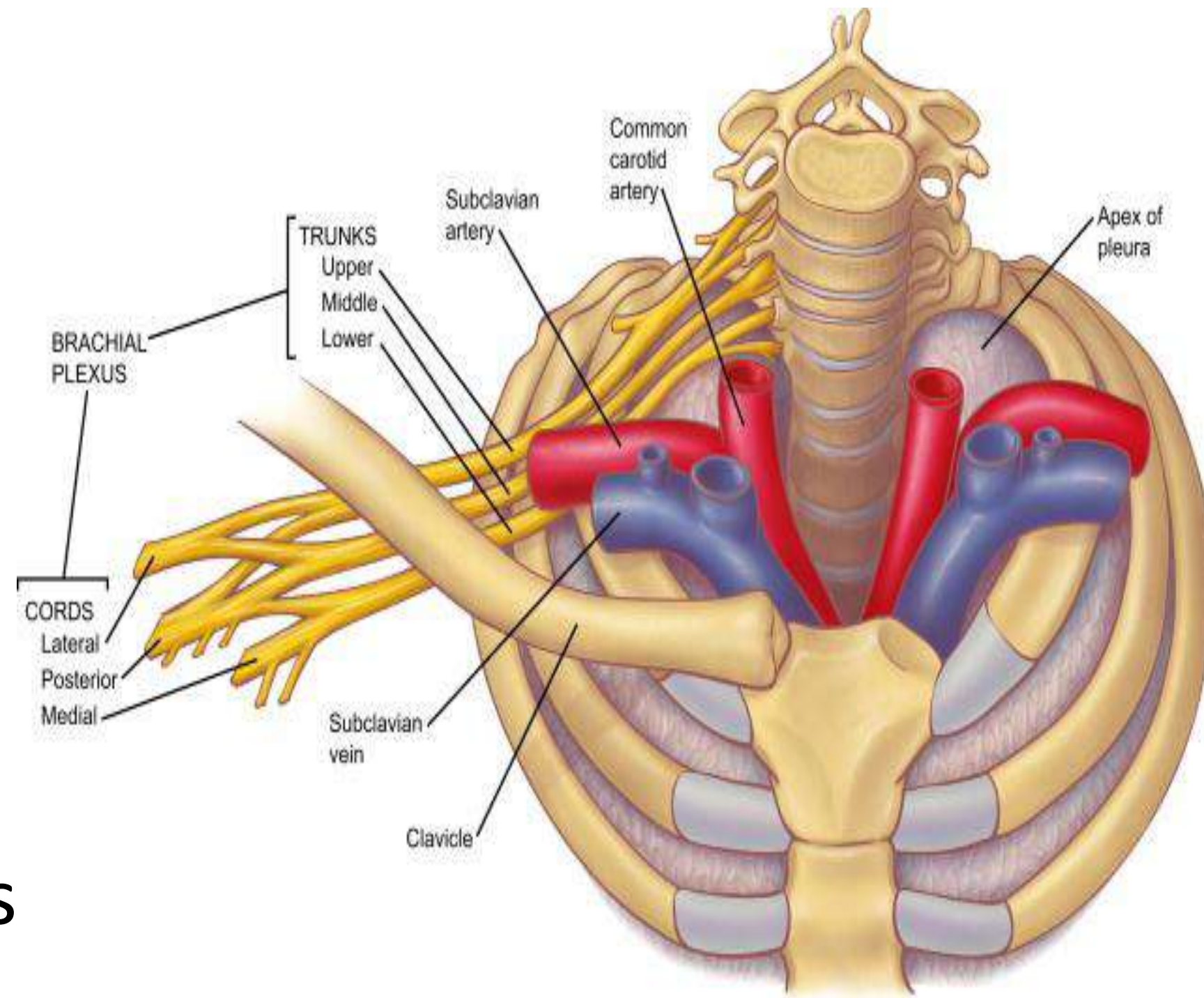
Superior thoracic aperture

لین اسما خارج ہاں
لے رتہ ہاں وے بیطعوانہ

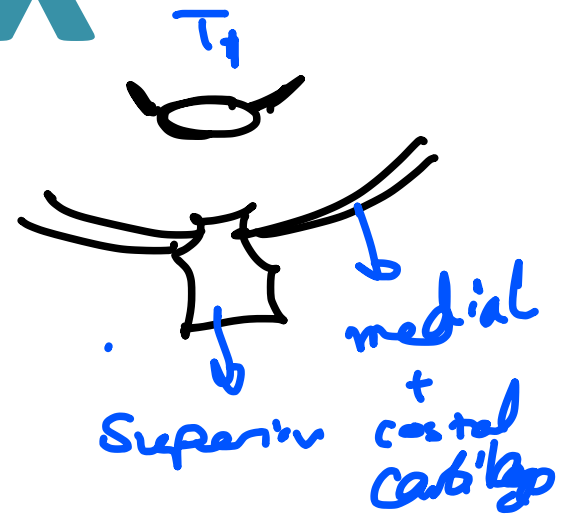
(Thoracic outlet)

is the opening communicates the chest cavity with the root of the neck.

- It is called an **outlet** because important vessels and nerves emerge from the thorax here to enter the neck and upper limbs.

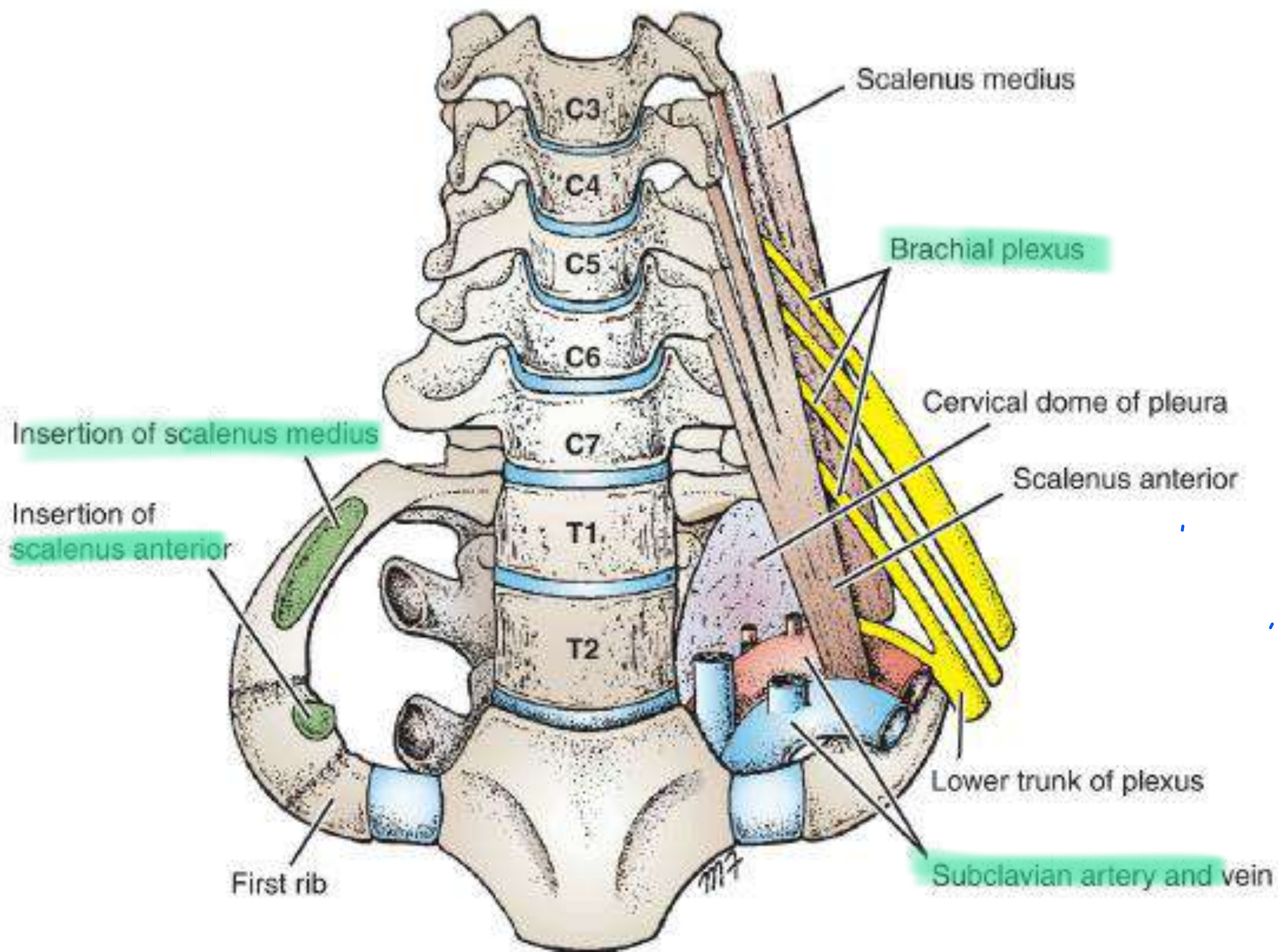


Openings of the Thorax



- **Boundaries of thoracic outlet:**

- **Posterior** : first thoracic vertebra (T1)
 - **Lateral** : medial borders of first ribs and their costal cartilages
 - **Anterior** : superior border of manubrium sterni.
- The opening is obliquely placed facing upward and forward.
الفتحة مائلة لأعلى و للأمام.
 - The esophagus, trachea and many vessels and nerves pass through this small opening.



Openings of the Thorax

Inferior thoracic aperture

- Thoracic cavity communicates with abdomen through a large opening which is closed by the diaphragm. The opening is bounded:

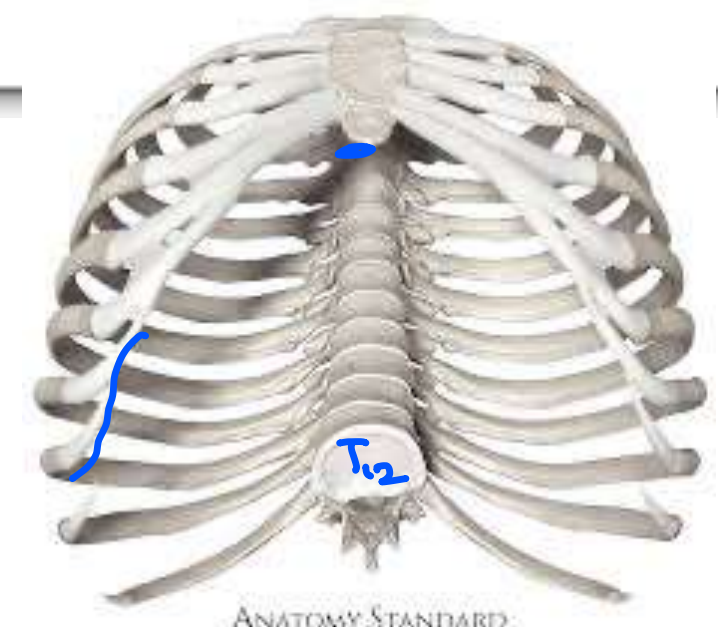
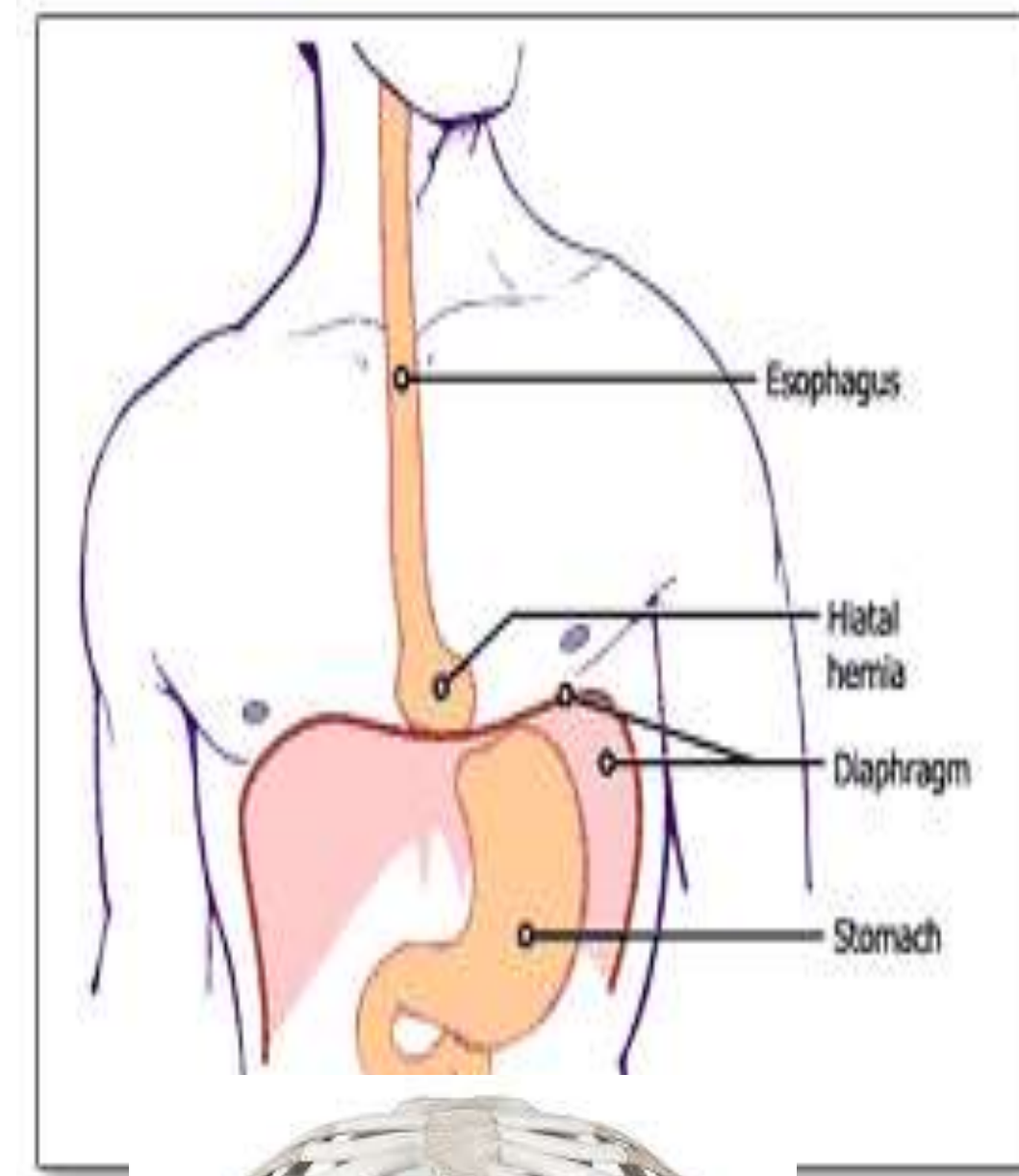
➤ **Posterior** : 12th Thoracic vertebra

➤ **Lateral** : curving costal margin.

➤ **Anterior**: xiphisternal joint.

- The esophagus and many large vessels and nerves pass through the diaphragm.

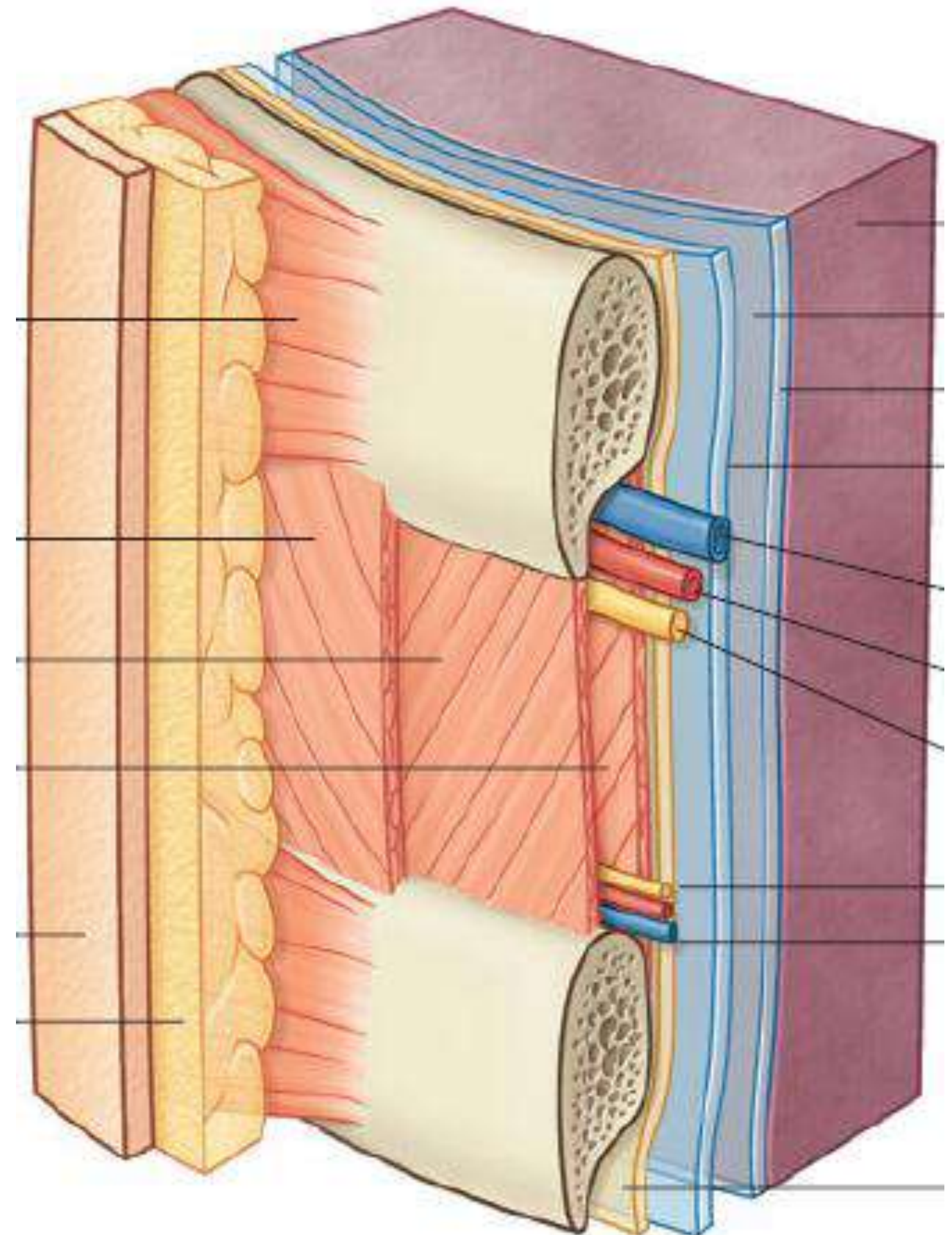
• trachea قسط

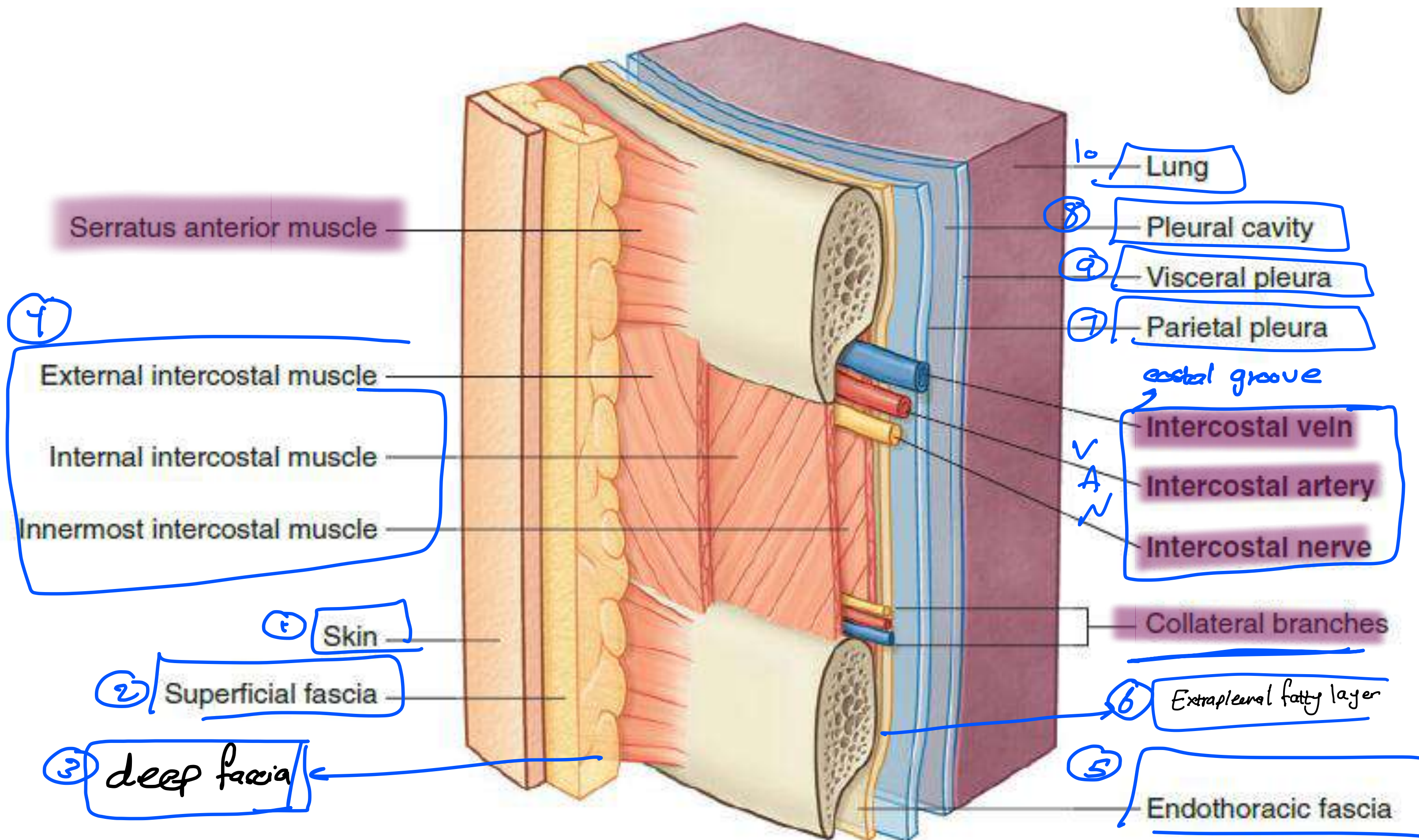


Intercostal Spaces

Thoracic wall layers

1. Skin
2. Superficial fascia "subcutaneous fat"
3. Deep fascia "thoracic fascia"
4. Intercostal muscles
5. Endothoracic fascia "آخري جھيل قبل از pleura
مقعره ~ پورا"
6. Extrapleural fatty layer
7. Parietal pleura





Intercostal Spaces

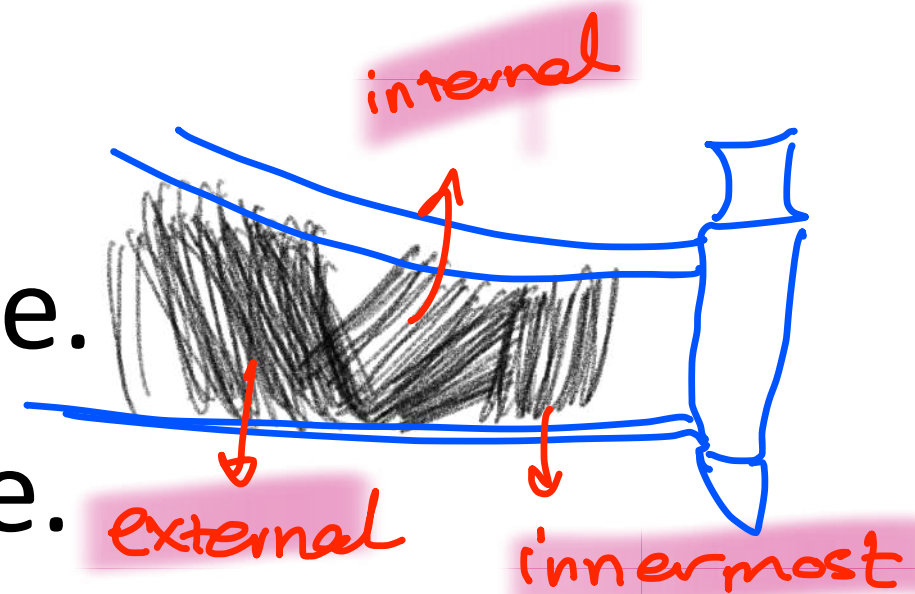


□ The spaces between the ribs contain **three muscles**

سلسلة
التي

of respiration:

1. The **external** intercostal muscle.
2. The **internal** intercostal muscle.
3. The **innermost** intercostal muscle



Intercostal muscles **are supplied by** the **corresponding** **intercostal nerves.**

من تغذية هذه العضلات بالأعصاب المتكافئة لكل
ضلع.

External Intercostal muscle

Intercostal nerve

Intercostal artery

Intercostal vein

Costal groove (VAN)

Internal Intercostal muscle

Innermost Intercostal muscle

Collateral branches

بالسيفم نغزى ترتيب د vessels

لانه لايم نغزى قوا د nerve بالزبط
لأنه في شىء ١ - intercostal
nerve block

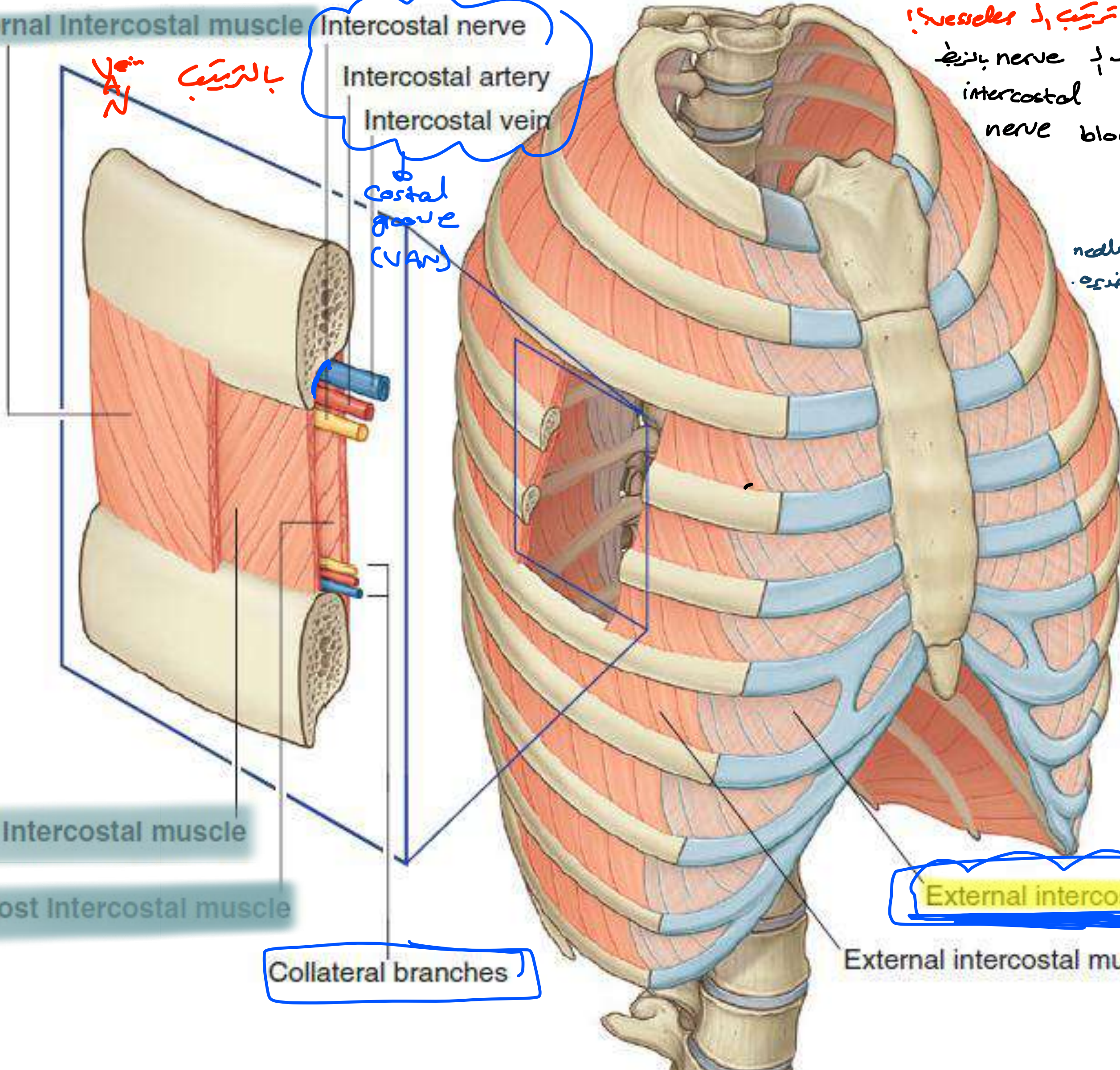
شعيرى؟

به طريق ادخال needle
على د nerve نخديه
في طرقت

cancer = rib fracture

External intercostal membrane

External intercostal muscle



✳️ أهم شي نعرفه انه في Intercostal arteries و veins

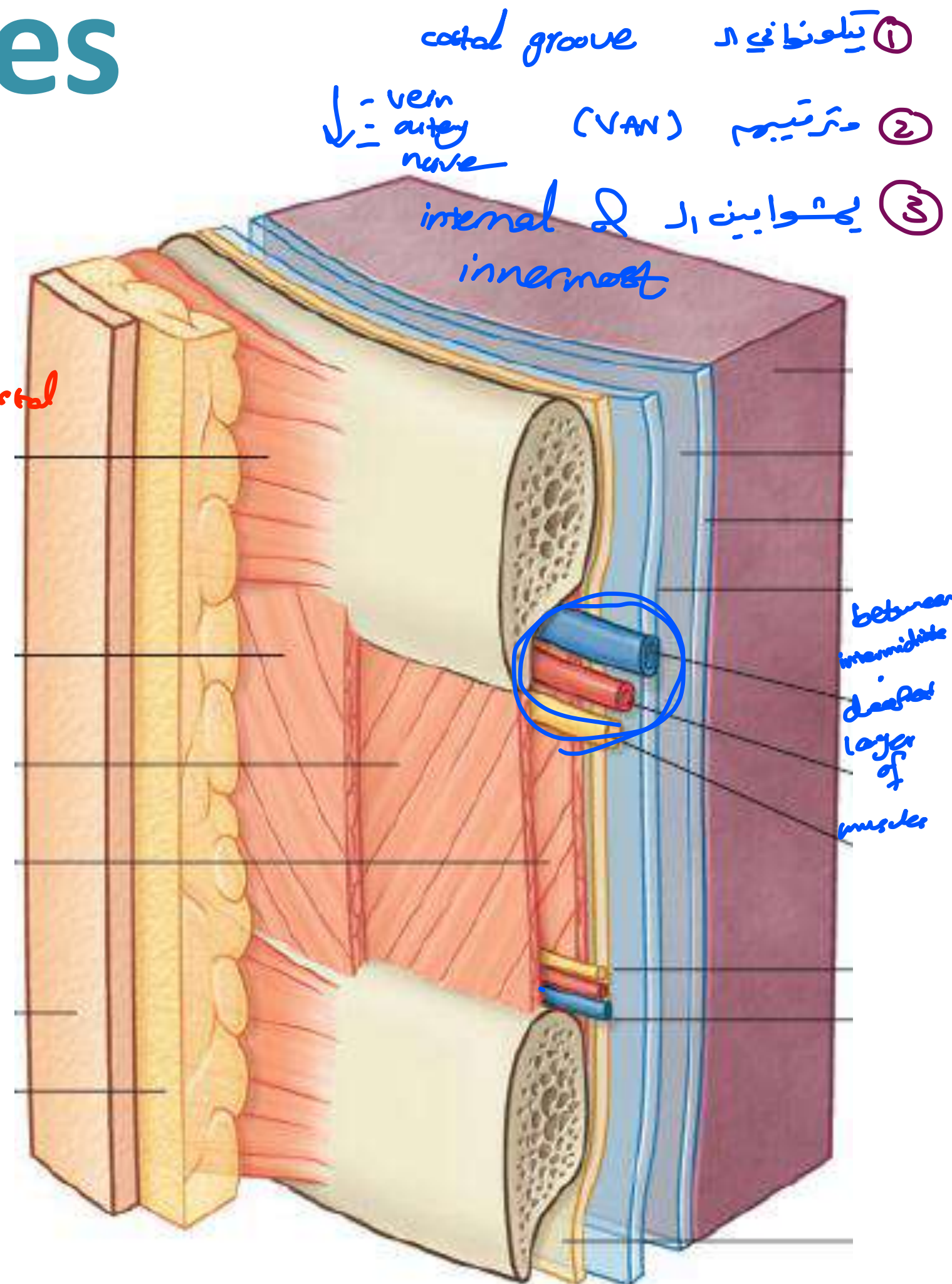
Intercostal Spaces

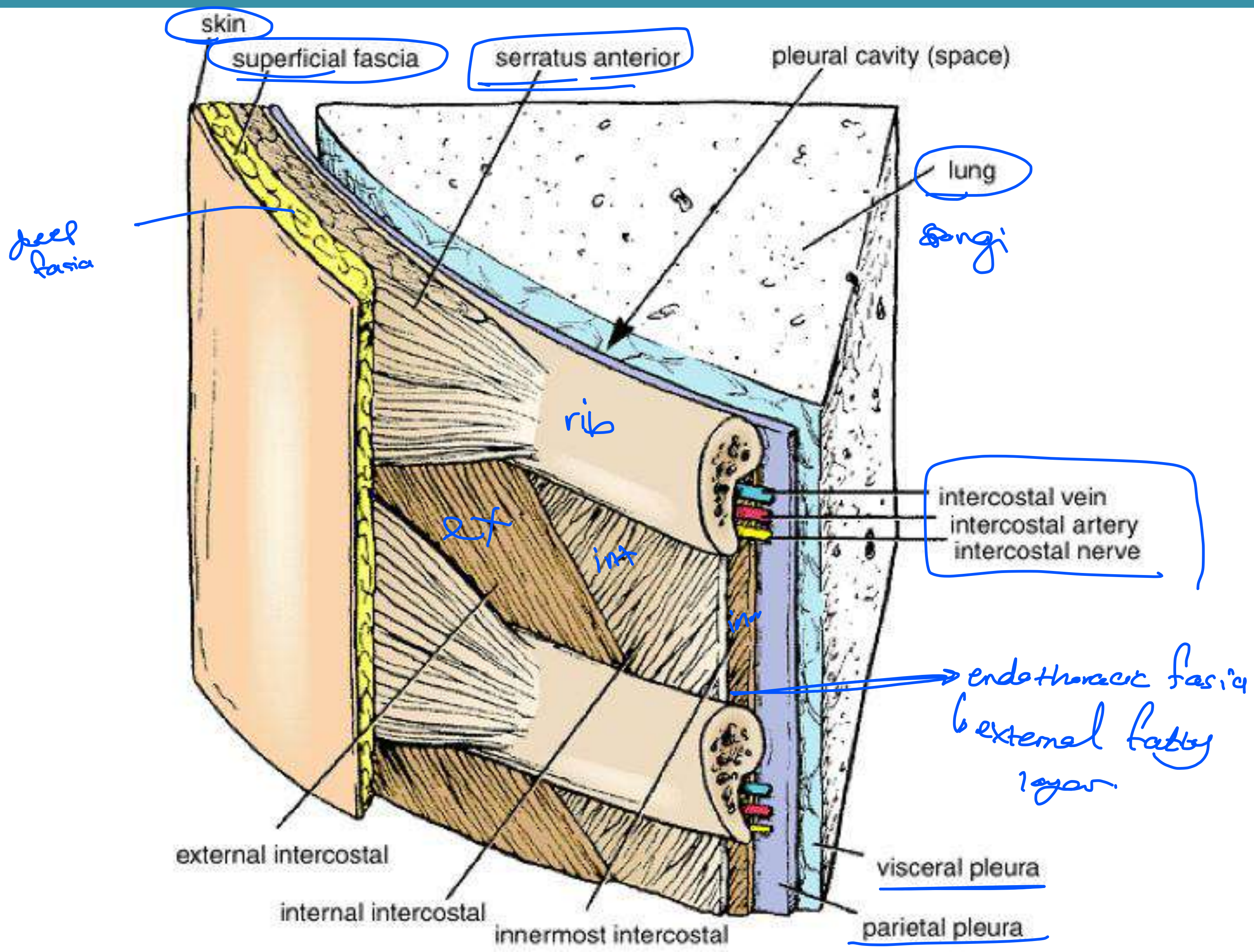
❑ The intercostal **nerves** and **blood vessels** run between the **intermediate** and **deepest layers** of muscles

↓ innermost intercostal muscle.

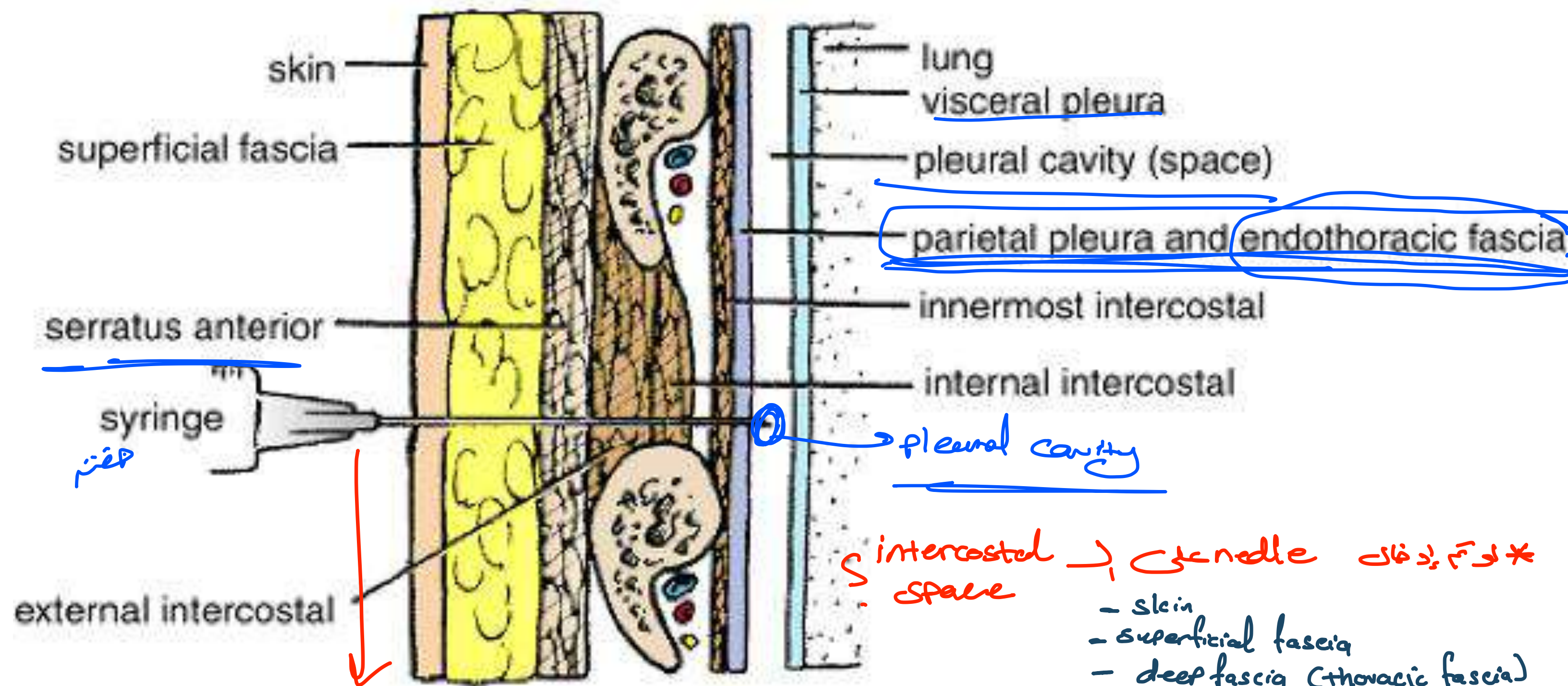
➤ They are arranged in the following order **from above downward**: intercostal vein, intercostal artery, and intercostal nerve (i.e., **VAN**).

VAN





* Thoracocentesis → pleural effusion.



upper rib
below

* نودل و سرنج و قاع → intercostal space

- skin
- superficial fascia
- deep fascia (thoracic fascia)
- external intercostal muscle
- internal " " "
- innermost " " "
- endothoracic fascia
- extrapleural fatty layer.
- parietal pleural

- pleural cavity
- visceral
- lungs.

External intercostal muscle

- The most superficial layer.

- Its fibers are directed **downward** and **forward**.

- From ^{origin} inferior border of the rib above.

- To superior border of the rib below.

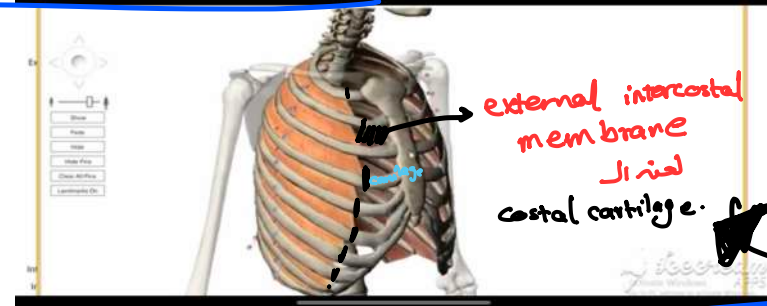
- The muscle extends forward to the **costal cartilage** where it is replaced by an **aponeurosis**, "**the anterior (external) intercostal membrane**"

external intercostal membrane

Innermost intercostal

External intercostal

Internal intercostal



يعني عضلات ال external intercostal muscle

لا تمتد من عند ال sternum لتضرب ال rib

بل من ال عند من قبل منطقة ال costal cartilage

وال external intercostal membrane

Internal intercostal muscle

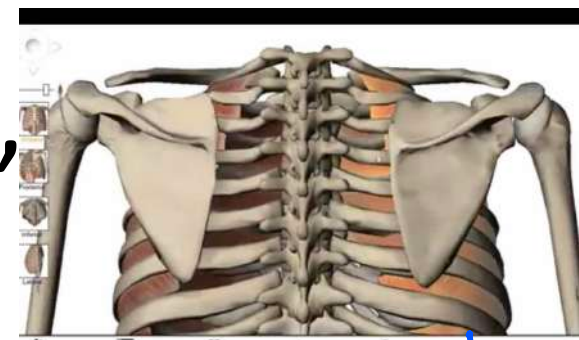
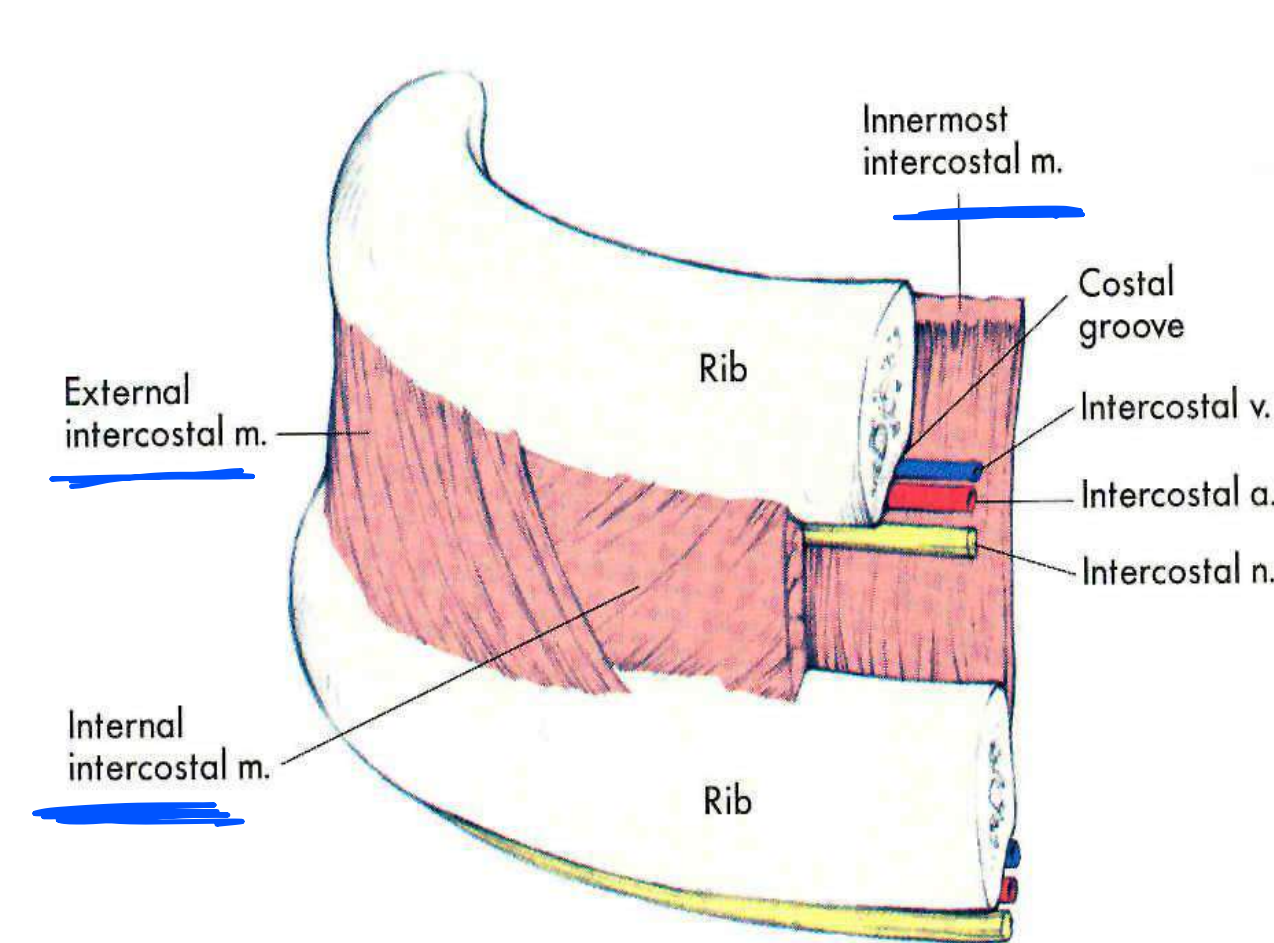
- The intermediate layer.

- Its fibers are directed downward and backward.

* ➤ From subcostal groove of the rib above.

➤ To upper border of the rib below.

- The muscle extends backward from the sternum in front to the angles of the ribs behind, where the muscle is replaced by an aponeurosis,
“the posterior (internal) intercostal membrane”



posterior intercostal membrane

Clavicle

Ribs

Pectoralis major
(dissected)

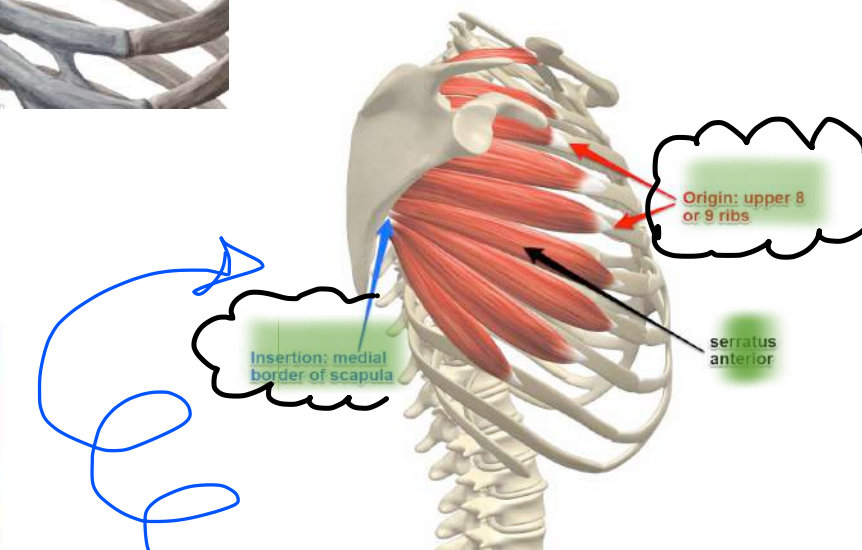
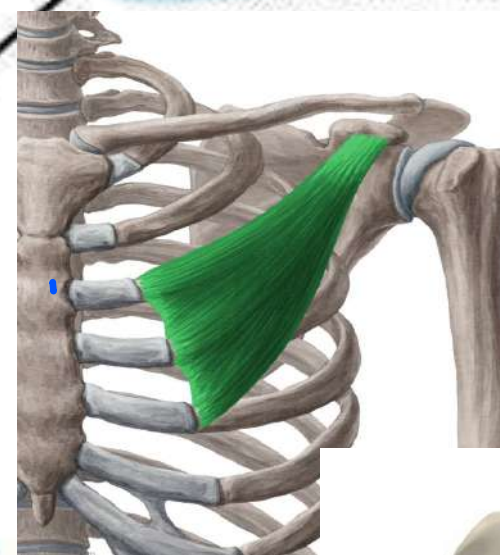
Internal
intercostal

Sternum

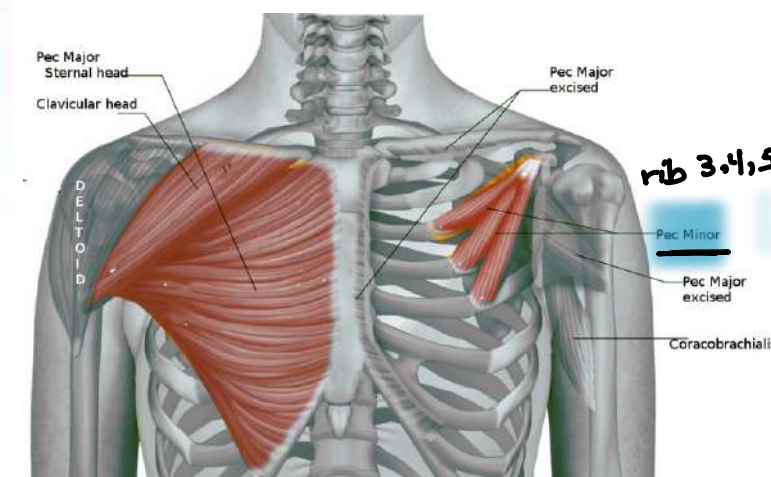
External
intercostals

rib 3, 4, 5

Pectoralis minor



Serratus
anterior



Coracobrachialis

Pectoralis major

Biceps brachii

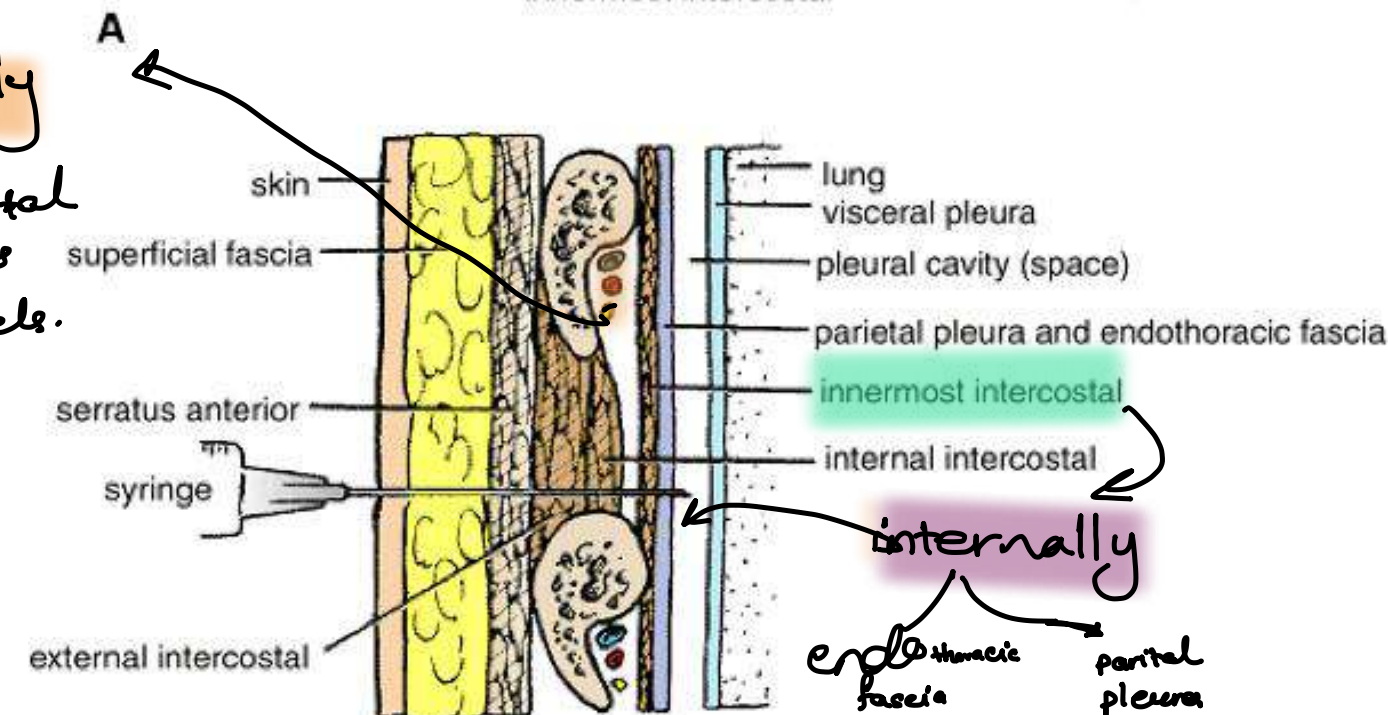
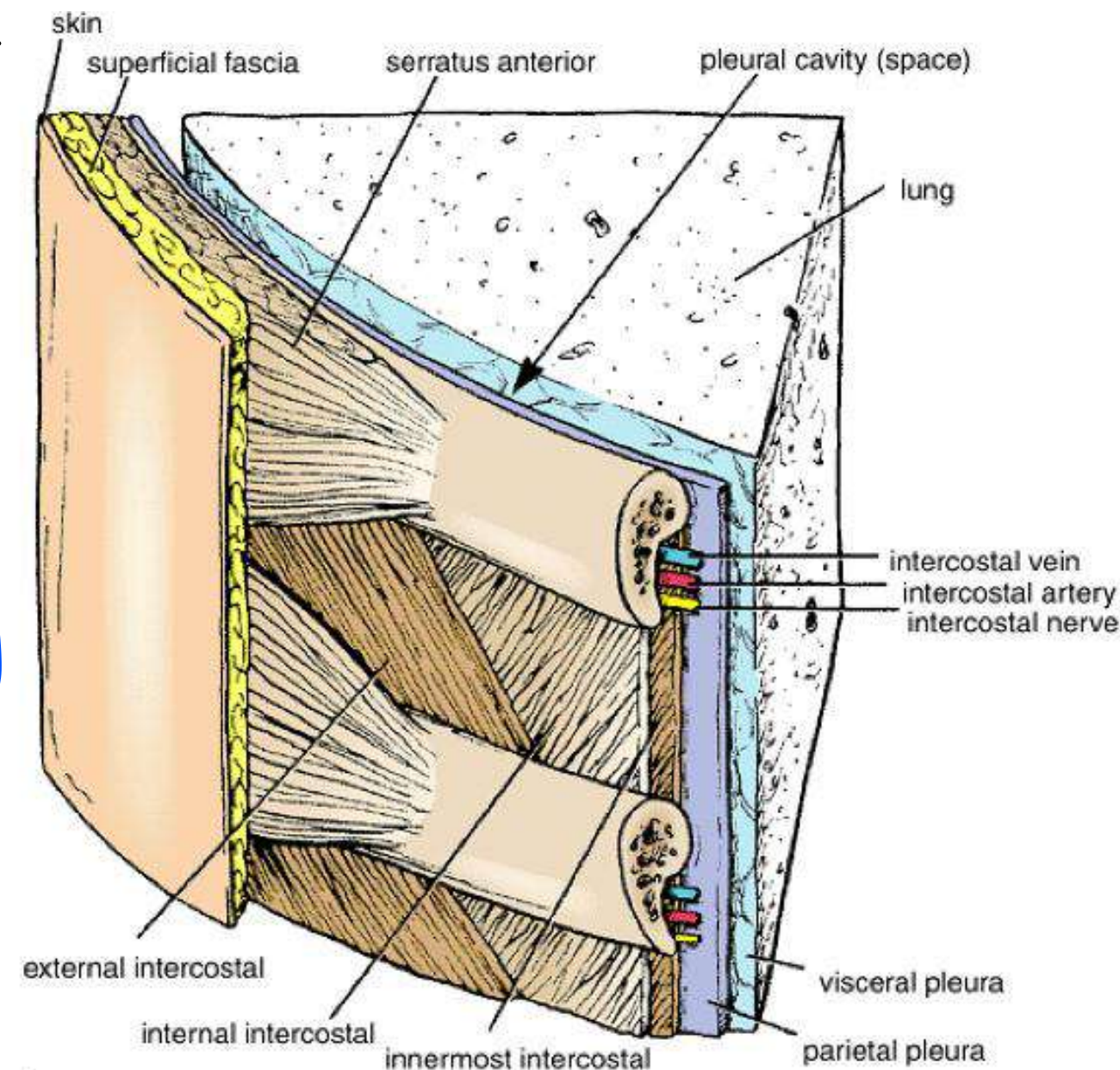
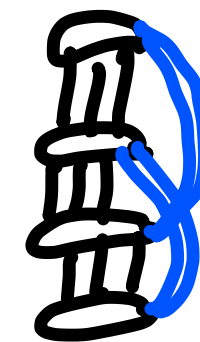
the superior
most and largest
muscle of the
anterior chest
wall.

Innermost intercostal muscle

- The deepest layer.
superficial → external
intermediate → internal
deepest → innermost

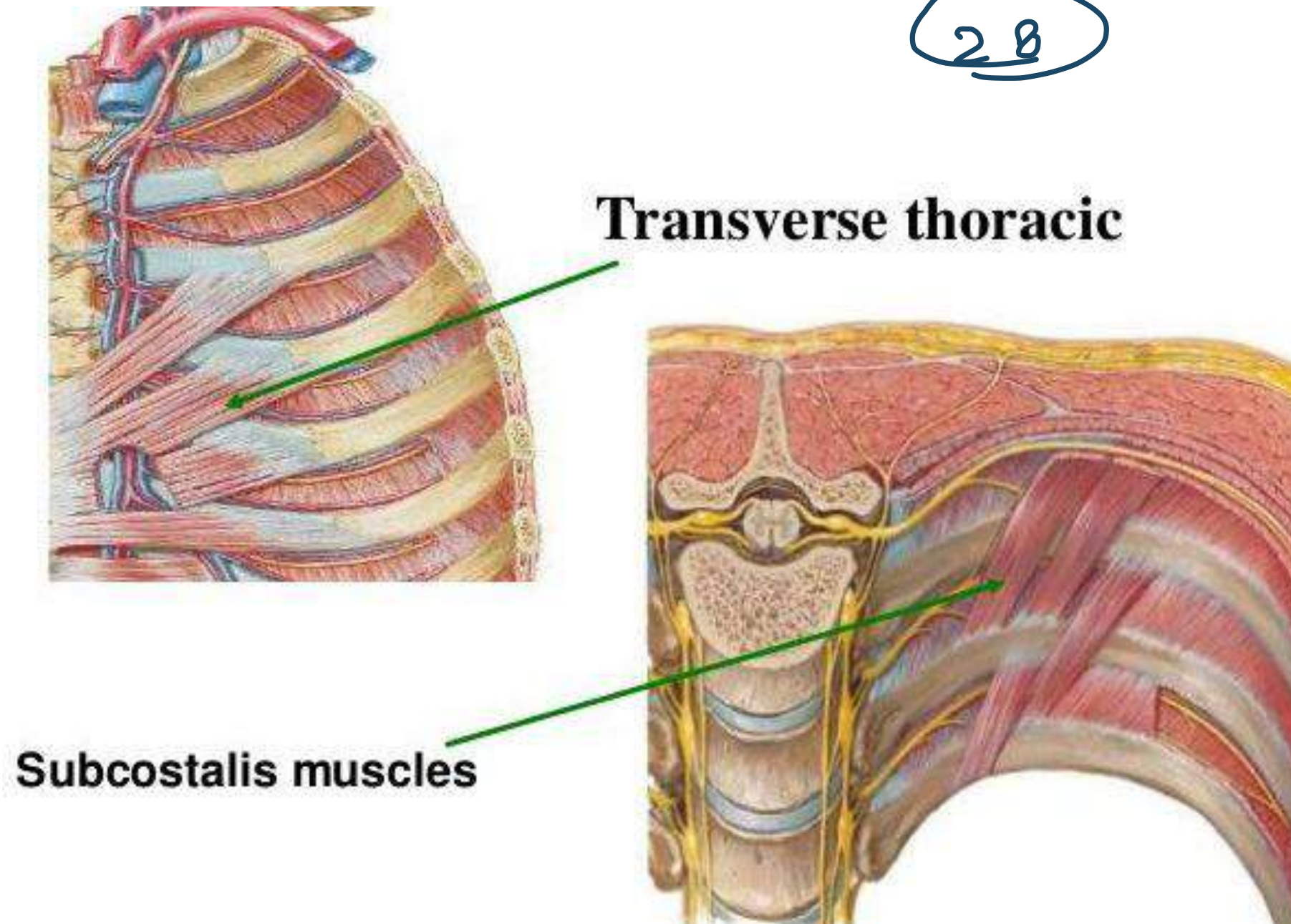
- It is an **incomplete** muscle layer and **crosses more than one intercostal space** within the ribs.
منحط
** بتيجي في سراجة قلمه تدي آخره space.*

- It is related **internally** to fascia (endothoracic fascia) and **parietal pleura** and **externally** to the **intercostal nerves and vessels**.



Innermost intercostal muscle

28



- It can be divided into three portions:

1. Anterior portion is named **transversus thoracis muscle**,
2. Lateral portion is the **innermost intercostal muscle**.
3. Posterior portion is the **subcostalis muscle**.

*
ترتبط بینه و Sternum
و رibs

Intercostal Muscles Action

- The primary function of the intercostal muscles during **respiration** appears to be to stabilize the position of the ribs to maintain the intercostal spaces.
- Their actions in ^{inspiration} **elevation** (external intercostals) and ^{expiration} **depression** (internal intercostals) of the ribs are most likely to occur during forced respiration.
- Preventing the sucking in or the blowing out of the tissues with changes in **intrathoracic pressure**.

منع انسحاب أو نفخ مع التغيرات في الـ pressure.

٨١

Levatores Costarum

من تشريح

من خلاصة = ribs

* عضلة تحمل على فتح ال
Contraction

التي
inspiration
شئ ال external

- There are 12 pairs of muscles.

- Each levator costa is triangular in

* كل ريب في عضلة
ماسة بال tip
transverse process

shape.
origin الى هنا في 7 ت لانه ختمة
first rib
T2 ماسة ب ريب
T2 ماسة ب ريب

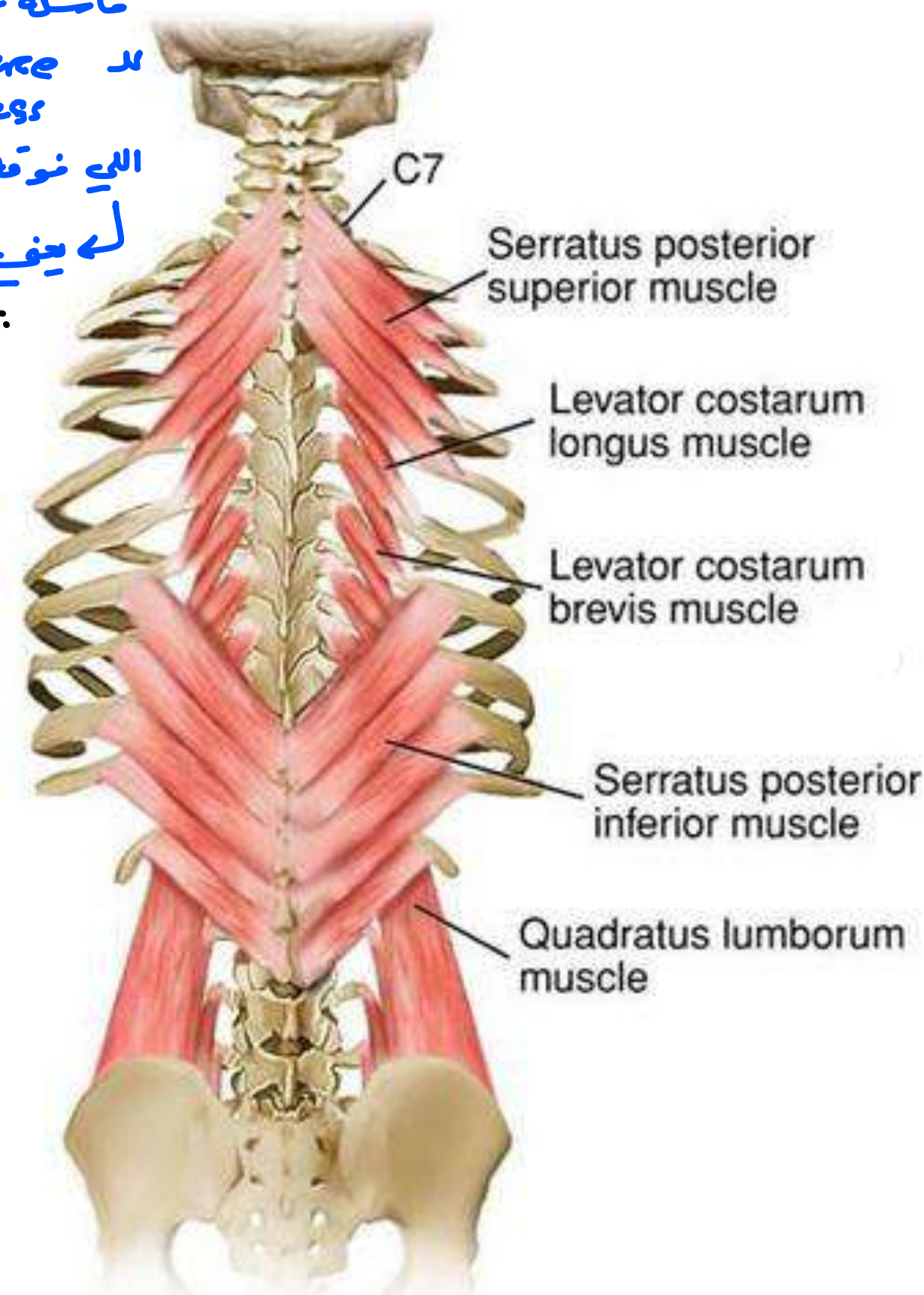
- **Arises** by its apex from the **tip** of the transverse process.

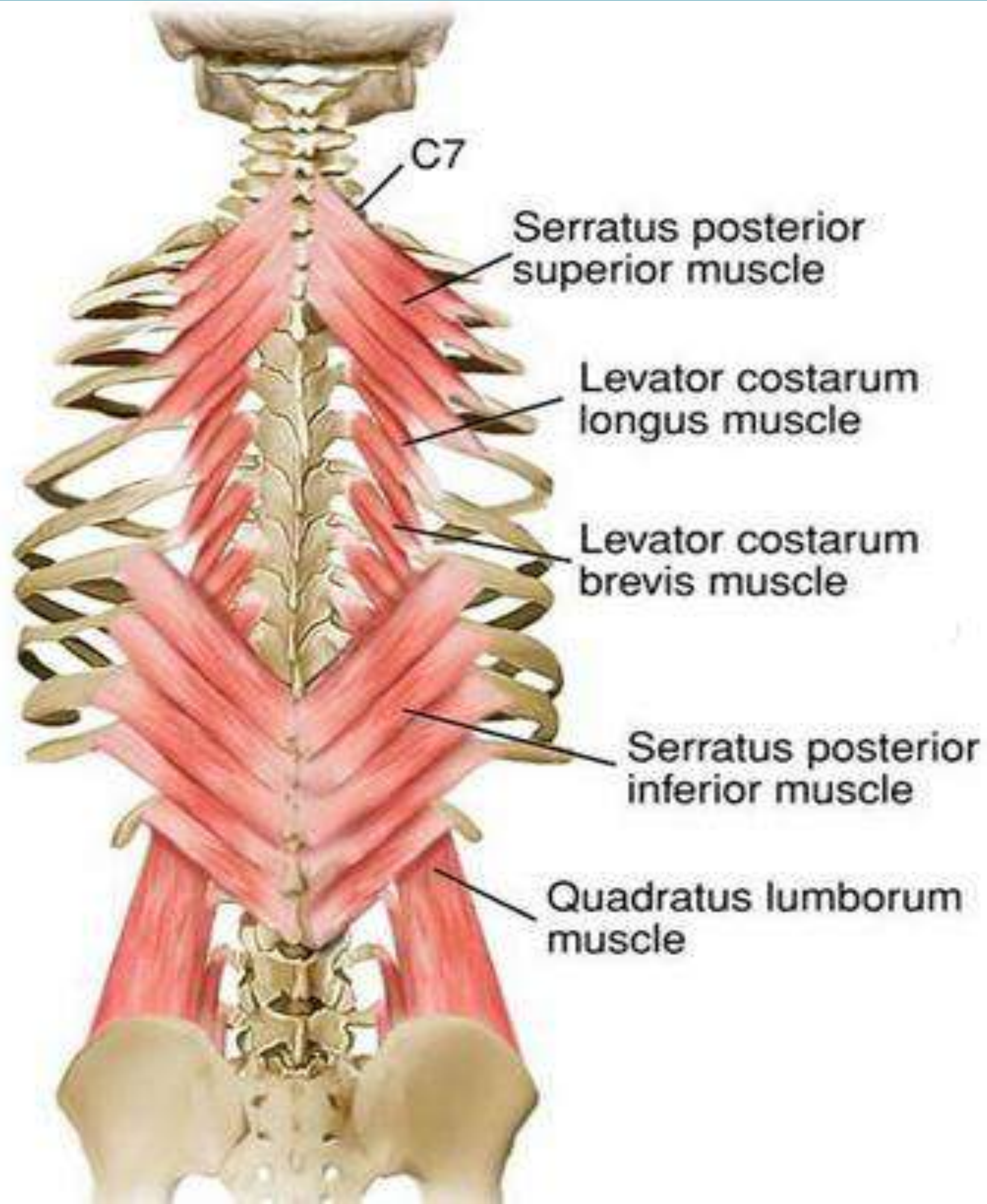
- **Inserted** into the rib below.

- **Action:** Each raises the rib below and is therefore an inspiratory muscle.

- **Nerve supply:** Posterior rami of thoracic spinal nerves.

= branch





و بمعنى منشار

Serratus Posterior Superior Muscle

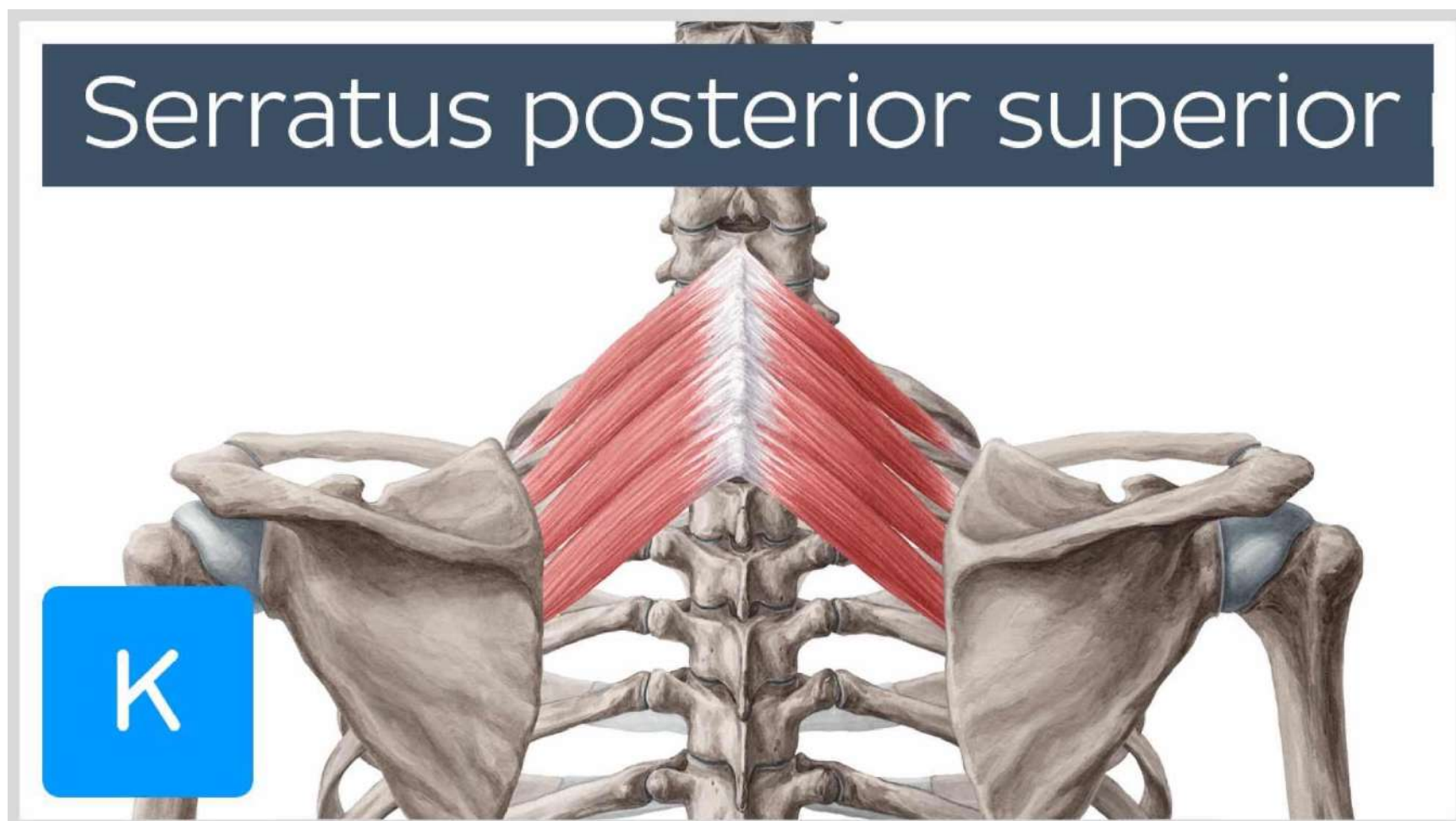
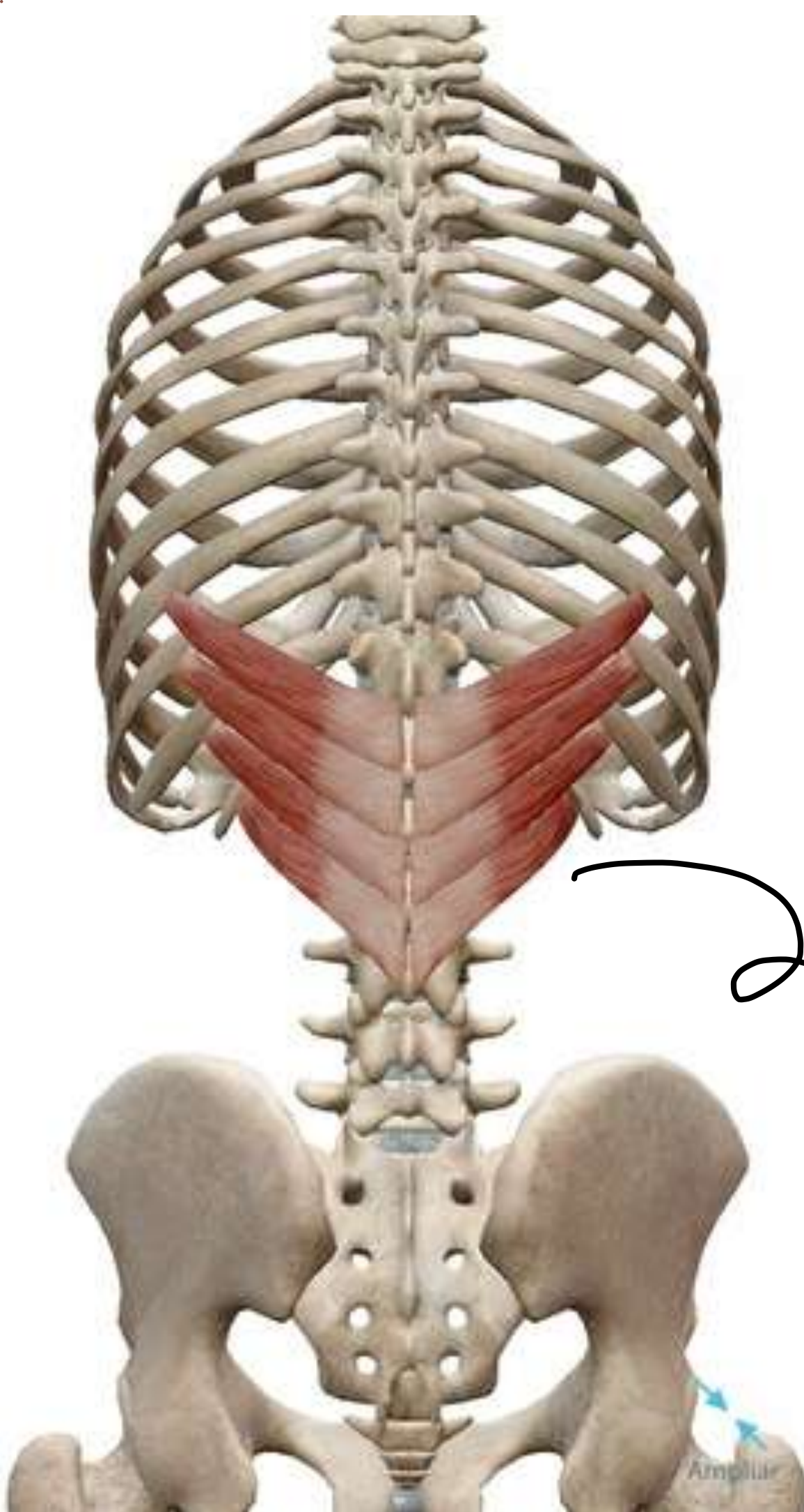
- Arises from lower cervical and upper thoracic spines.
- inserted into the upper ribs.
- Action: It elevates ribs & is therefore inspiratory muscle
- Nerve supply: Intercostal nerves.

Serratus Posterior Inferior Muscle

- Arises from lower thoracic and upper lumbar spines
- inserted into the lower ribs.
- Action: It depresses ribs & is therefore expiratory muscle
- Nerve supply: Intercostal nerves.

متردد
متردد

T₁₂



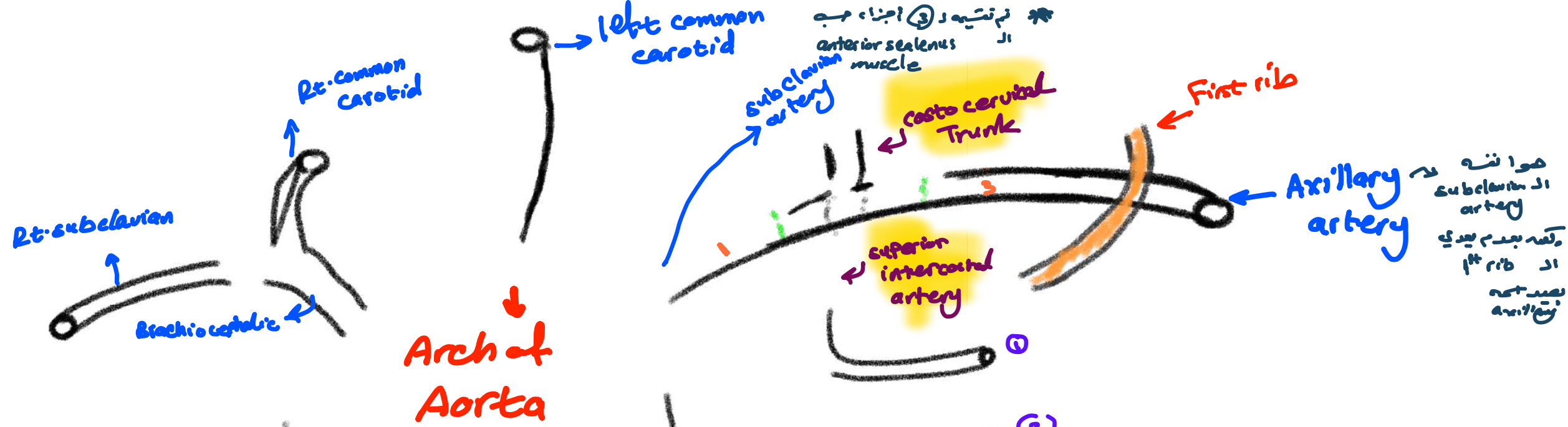
serratus posterior inferior

Arterial supply of thorax

1) Subclavian artery gives
superior intercostal art. & internal thoracic art.
Posterior 211 ← صِغَطِي 211
← صِغَطِي أ.د. ك ↓ Anterior ✓

2) Axillary artery gives
superior thoracic art. & lateral thoracic art.

3) Thoracic aorta gives
posterior intercostal art. & subcostal art.
↓ 3 → 11
↓ 12

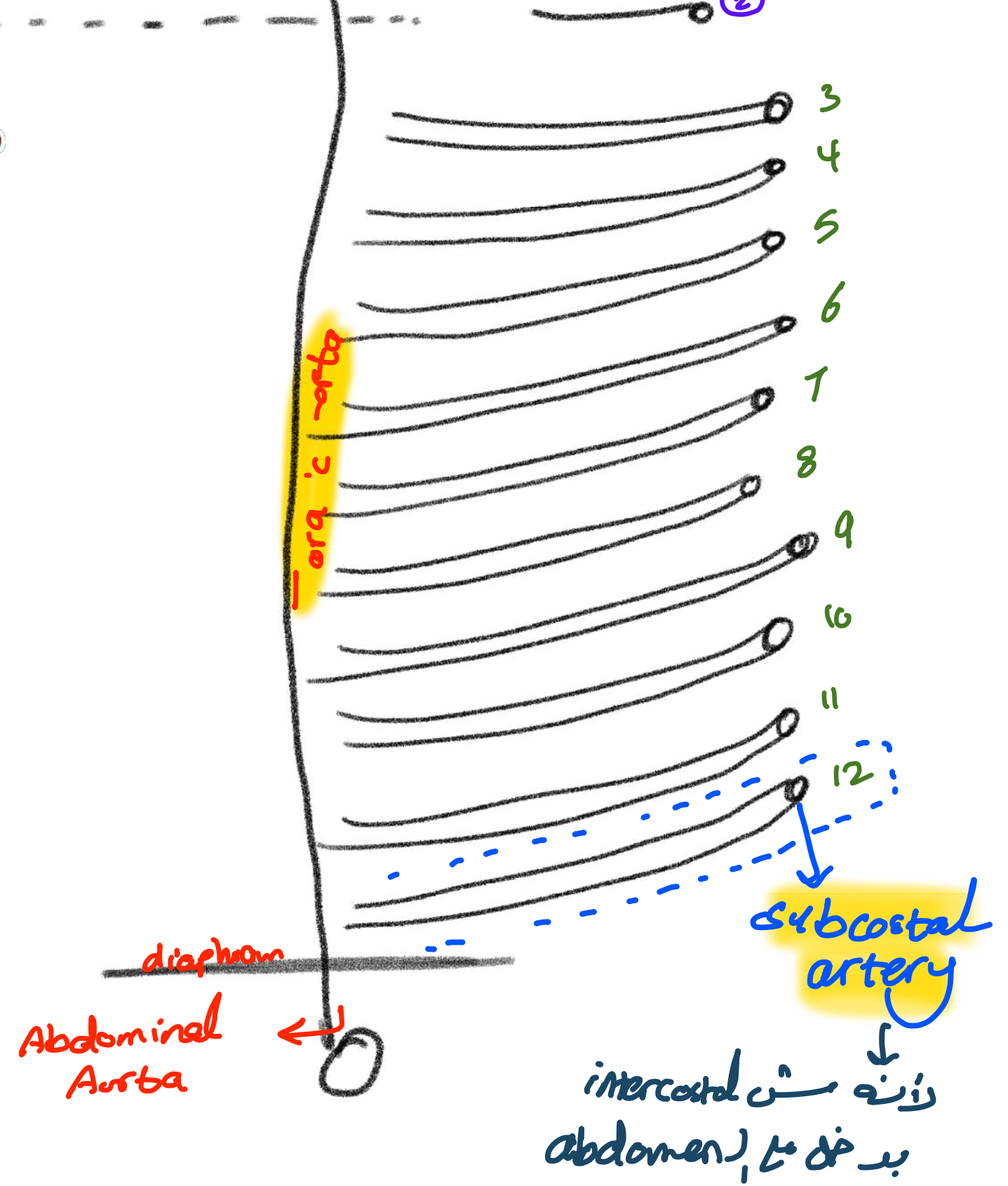


* Posterior ICA :

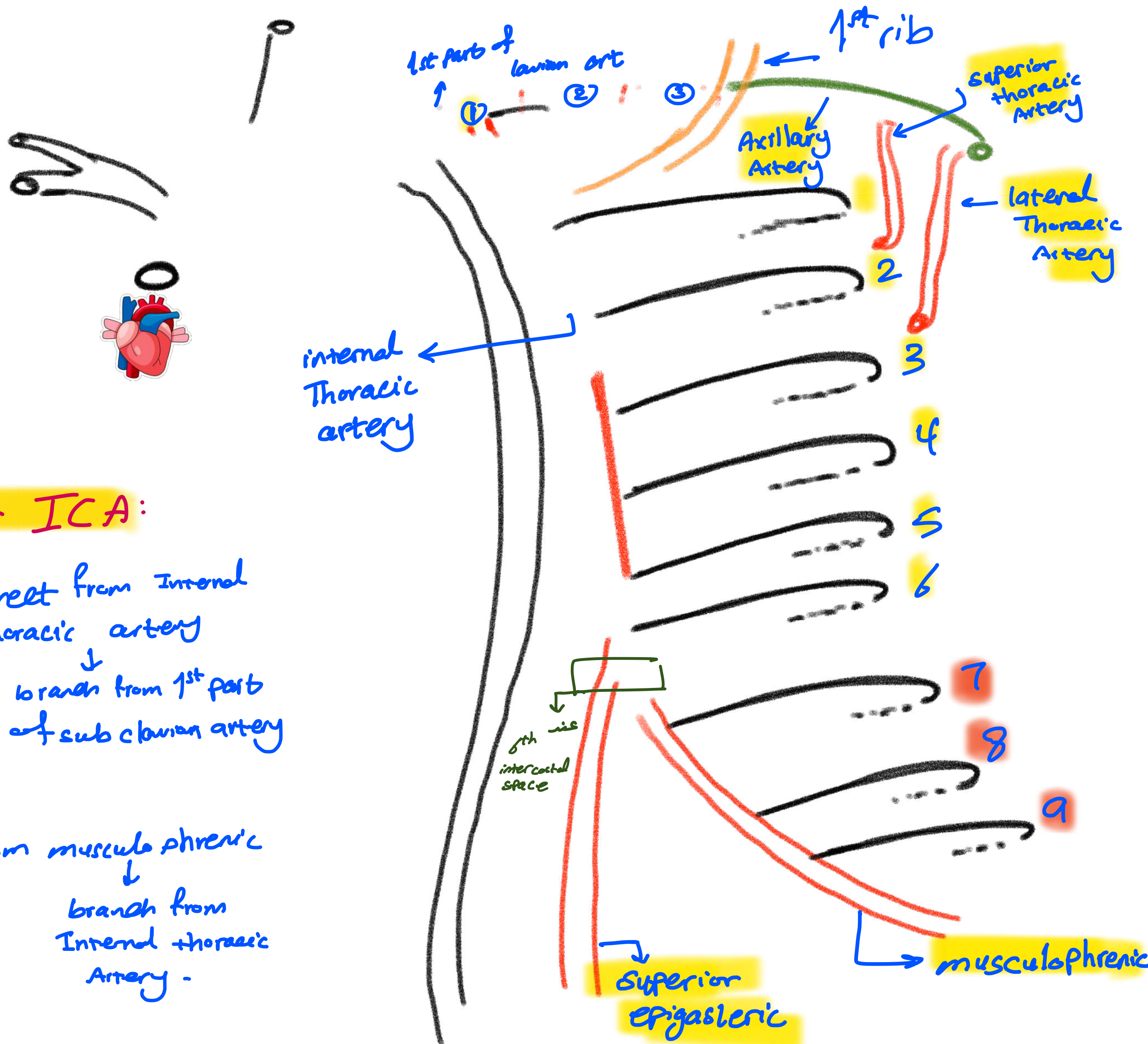
3 → 11 : direct from thoracic Aorta

1, 2 : superior intercostal artery
 ↓
 branch from Costocervical Trunk
 ↓
 from 2nd part of subclavian artery.

* 1st part of Aorta is not present in the posterior part.
 بـيـطـقـ 1st part of Aorta is not present in the posterior part.



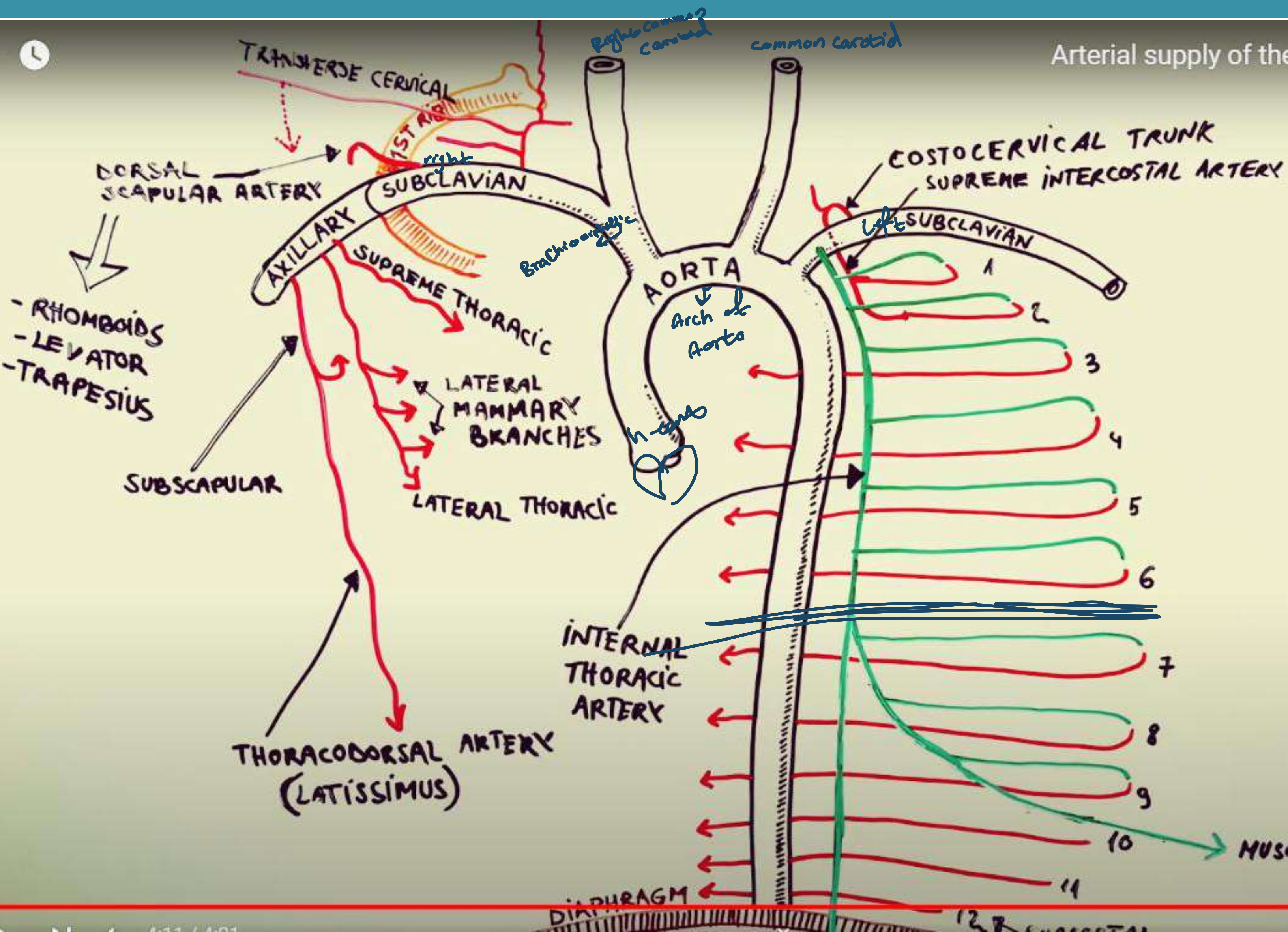
↓
 intercostal arteries
 بر خـد مـتـ اـبـدـمـن

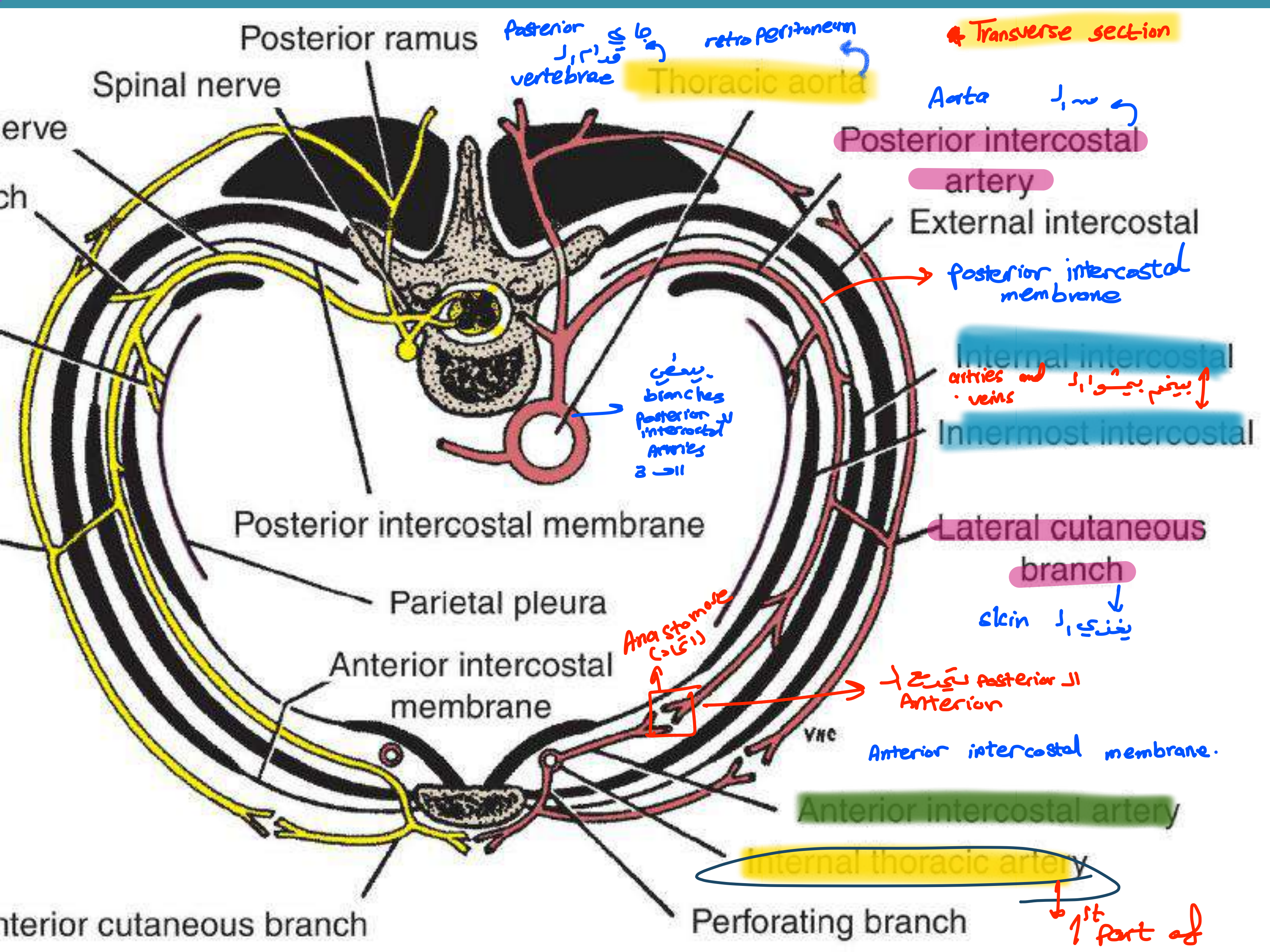


* Anterior ICA:

* 1 → 6 : direct from Internal thoracic artery
 ↓
 branch from 1st part of subclavian artery

* 7, 8, 9 : From musculophrenic
 ↓
 branch from Internal thoracic Artery -





Internal Mammary artery Internal Thoracic Artery

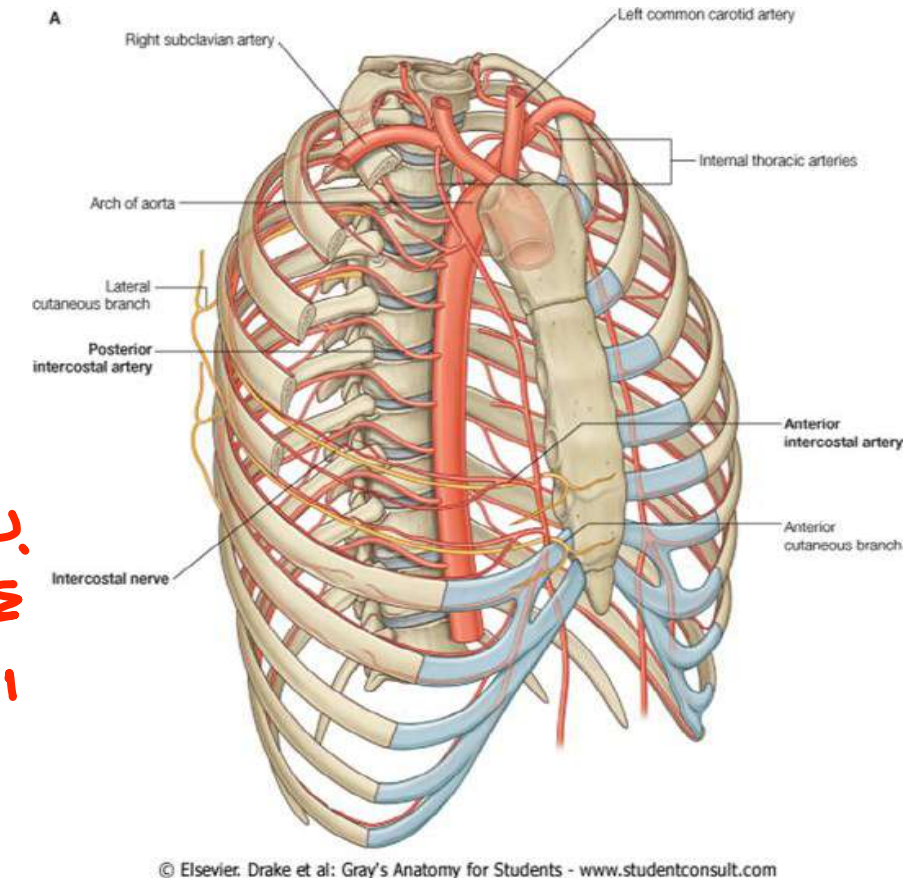
- It is a branch of the **first part** of the **subclavian artery** in the neck.
- It **descends vertically** on the pleura **behind the costal cartilages**, a **fingerbreadth lateral to the sternum**.
- Ends in the **6th intercostal space** by **dividing into**:
 - ✓ **Superior epigastric art.**
 - ✓ **Musculophrenic arteries.**
- The internal thoracic artery supplies the anterior wall of the body **from the clavicle to the umbilicus**.

بيترن بشكل
تجودي على بعد عرض
اصبح س.د. Sternum

7.8.9

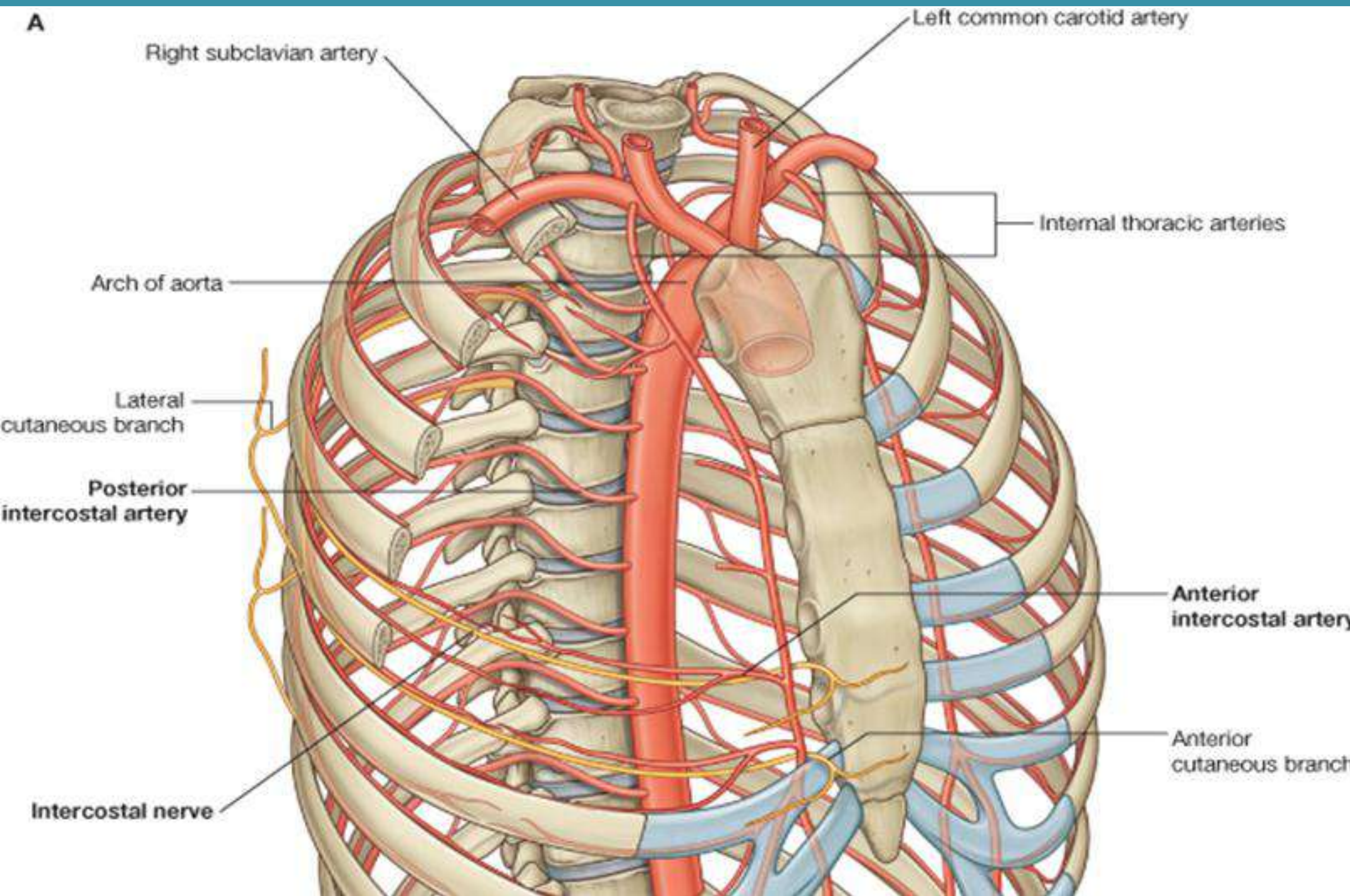
بعضي

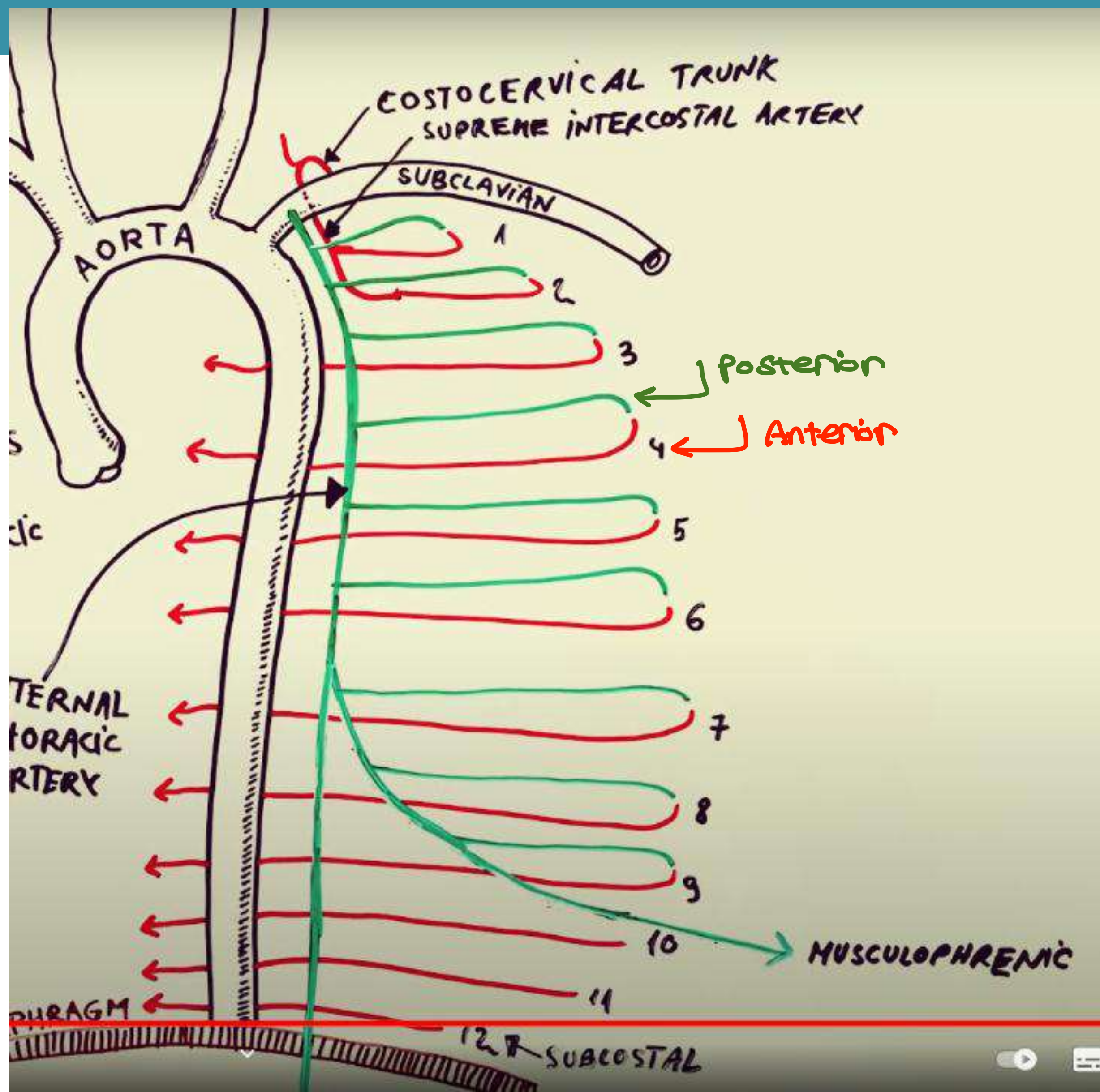
له التي بجمل لد umbilicus هو الـ Superior epigastric



© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com

A



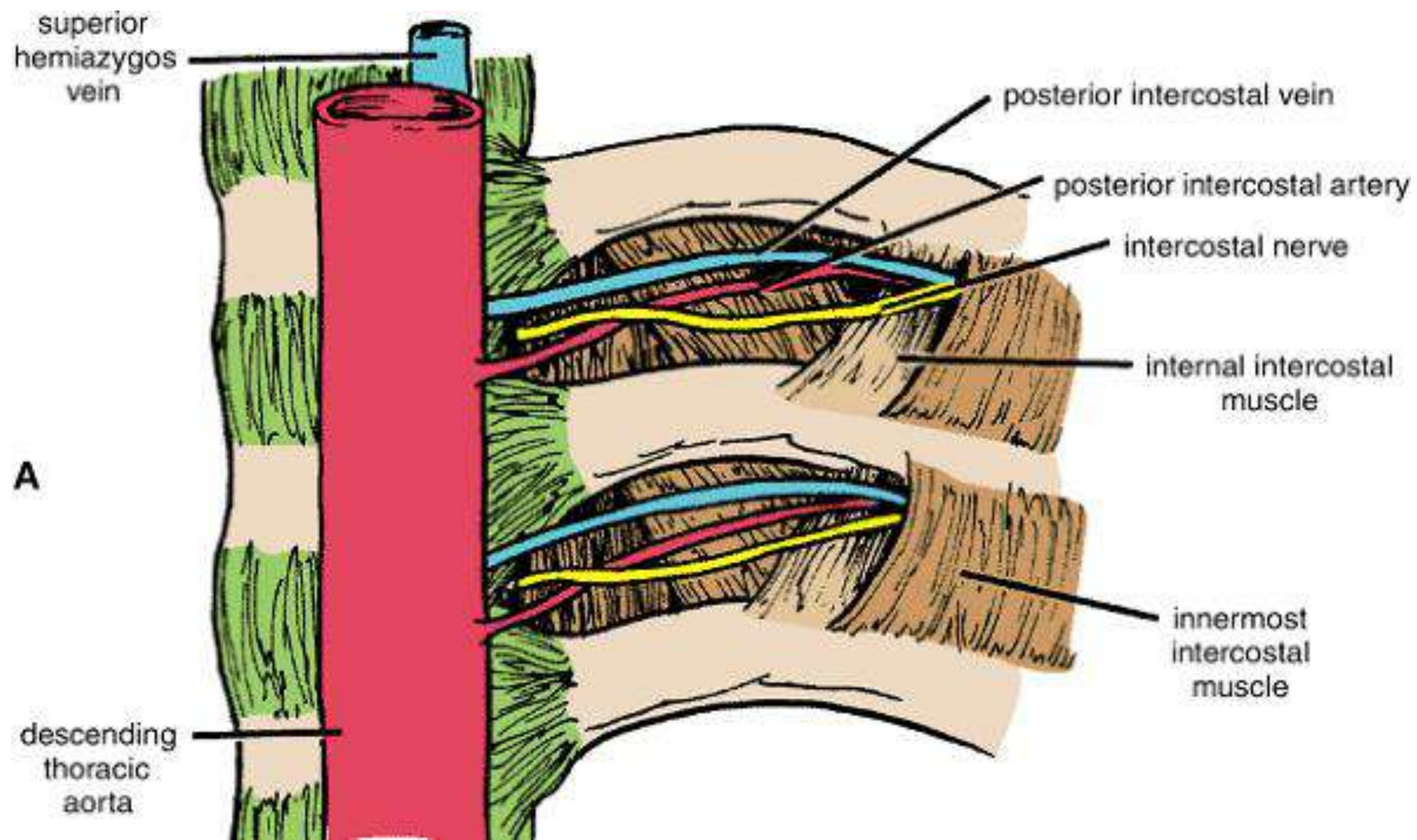


Branches of Internal Thoracic Artery

- **2 anterior intercostal** arteries for upper 6 intercostal spaces.
 - اختراجه، fascia، muscle، عظم → يروي يغذي Skin
- **Perforating** arteries, which accompany the terminal branches of the corresponding intercostal nerves.
- **Pericardio-phrenic** artery, accompanies the phrenic nerve & supplies the pericardium
- **Mediastinal** arteries to the contents of the anterior mediastinum (e.g., the thymus).
 - غدة - عترية
- **Superior epigastric** artery, which enters the rectus sheath of the anterior abdominal wall and supplies the rectus muscle as far as the umbilicus.
- **Musculophrenic** artery, runs around the costal margin of the diaphragm & supplies the lower intercostal spaces & diaphragm.

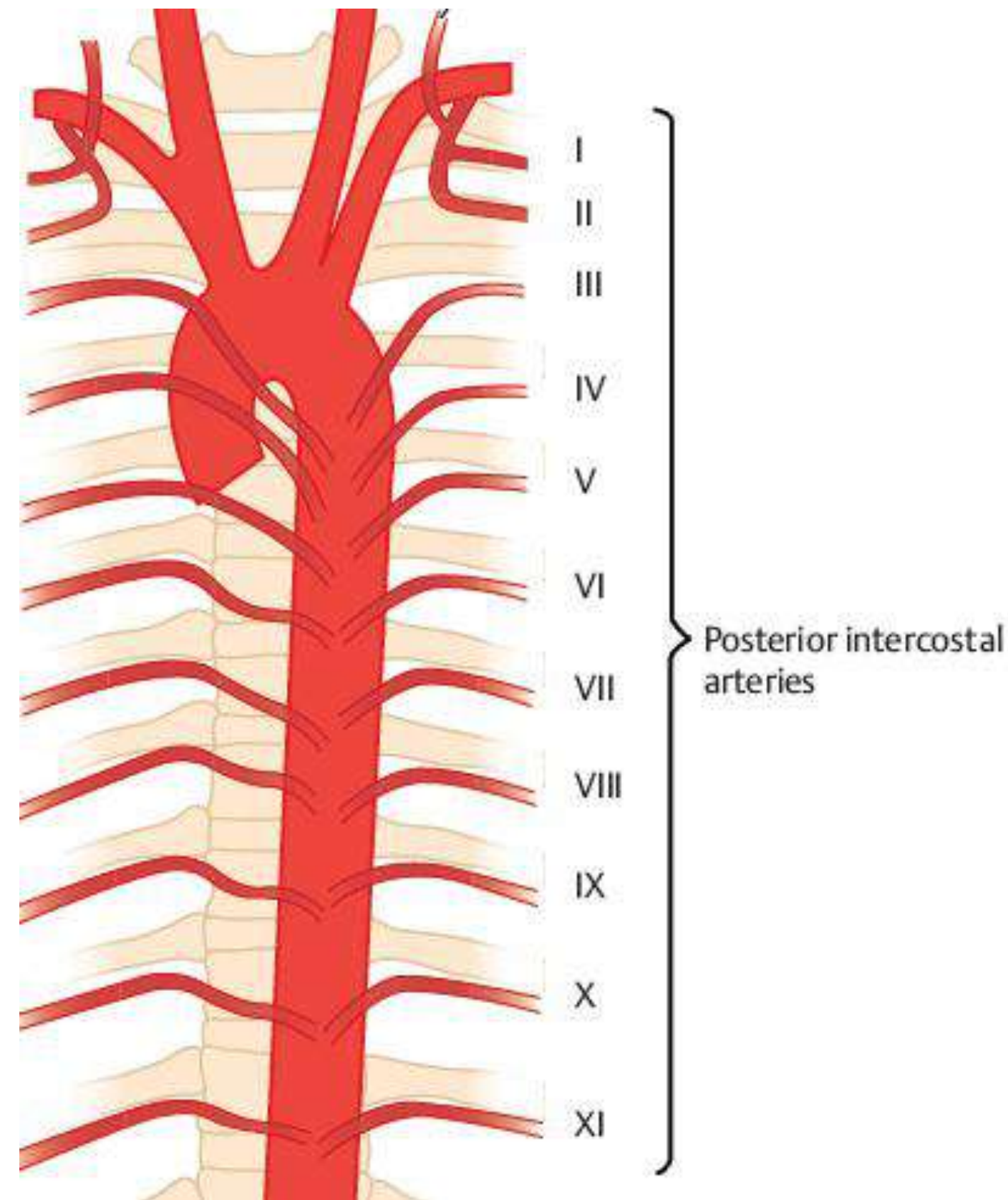
Intercostal Arteries

- Each intercostal space contains:
 - **Posterior intercostal artery** (large & single artery)
 - **Anterior intercostal arteries** (small & double arteries)



Posterior Intercostal Arteries

- For the **first two spaces** are branches from the **superior intercostal artery**, a branch of the **costocervical trunk** of the **2nd part of subclavian artery**.
- For the **lower nine spaces** are branches of the **descending thoracic aorta**.
- Each intercostal artery gives off branches to the muscles, skin, and parietal pleura.

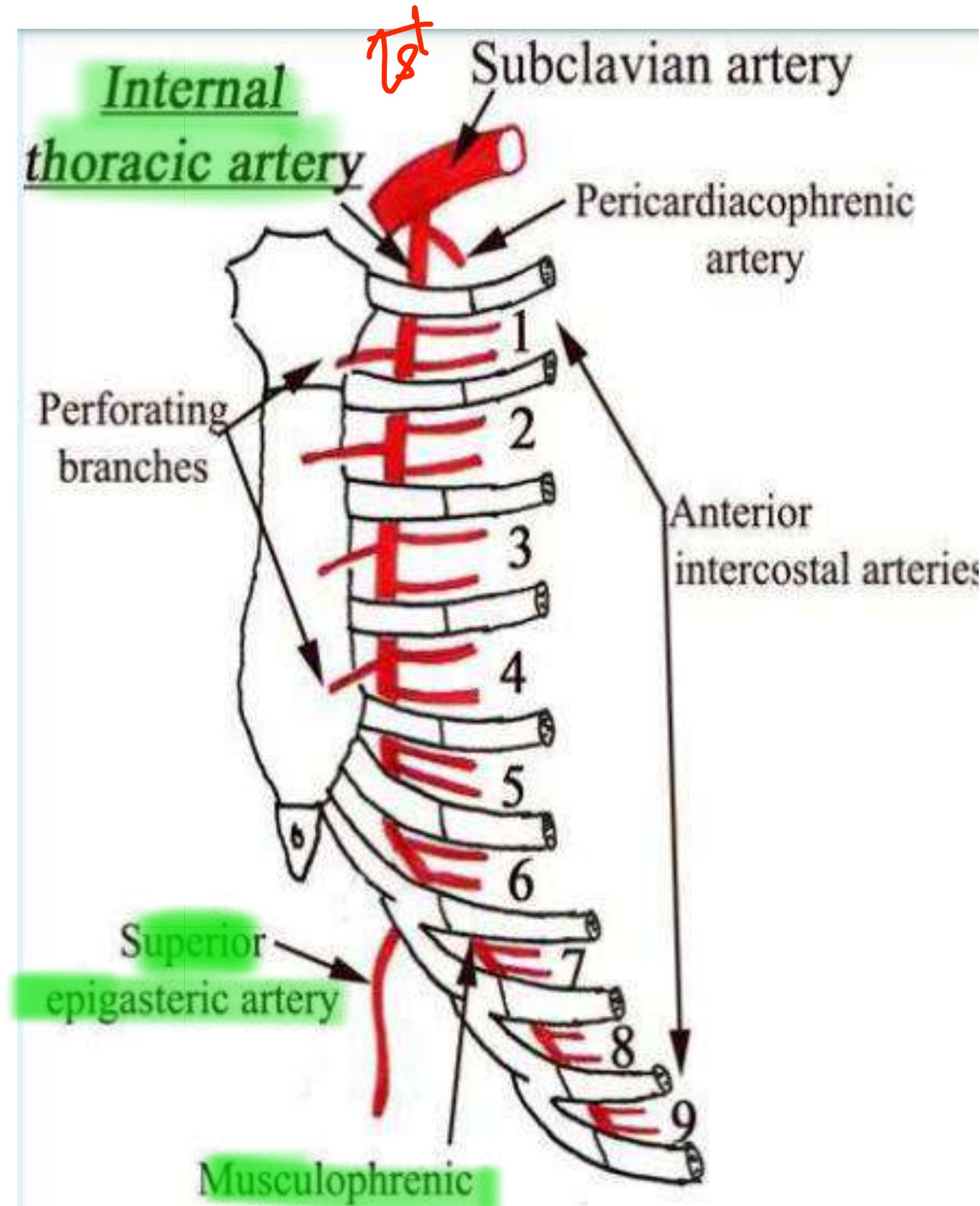


Anterior Intercostal Arteries

➤ For the **first six spaces** are branches of **internal thoracic artery** which arises from the **first part** of the **subclavian artery**.

7.8-9

➤ For the **lower spaces** are branches of **the musculophrenic artery**, one of the terminal branches of **internal thoracic artery**.



Venous drainage of thoracic wall

- **Intercostal Veins**

>> **posterior intercostal veins** (single & large)

drain into the **azygos** or **hemiazygos veins**

>> **anterior intercostal veins** (double & small)

drain into **internal thoracic** and **musculophrenic veins**.

- **Internal Thoracic Vein**

It accompanies the internal thoracic artery and drains into the **brachiocephalic vein** on each side

- All the venous blood of the thoracic wall drains finally into the superior vena cava

Posterior intercostal veins

- There are **11** Posterior intercostal veins on each side one found in each space.

- On Right side

- **1st** vein ends in right brachiocephalic vein

- **2nd, 3rd & 4th** veins unite to form right superior intercostal vein which ends in the azygos arch.

- **5th to 11th** and subcostal vein end separately in the azygos vein.

superior
svc

↓
12

Posterior intercostal veins

- On Left side
- **1st** vein ends in left innominate vein → Brachio cephalic
عربی، لا، كبر
- **2nd, 3rd & 4th** veins unite to form left superior intercostal vein which ends in left brachiocephalic vein.
- **5th to 8th** veins end in the superior (accessory) hemiazygos vein, which turns to the right crossing body of T8 vertebra to open into the azygos vein. ← على مستوى
- **9th to 11th and subcostal vein** end in the inferior hemiazygos vein which turns to the right crossing body of T9 vertebra to open into the azygos vein.

Peripheral nerve

cervical

Thoracic

lumbar

sacral

↓

تبدأ من دماغ

الجذع

من

الأسفل

من

الأسفل

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تبدأ من دماغ، يتطوع - spinal cord - بعض كل

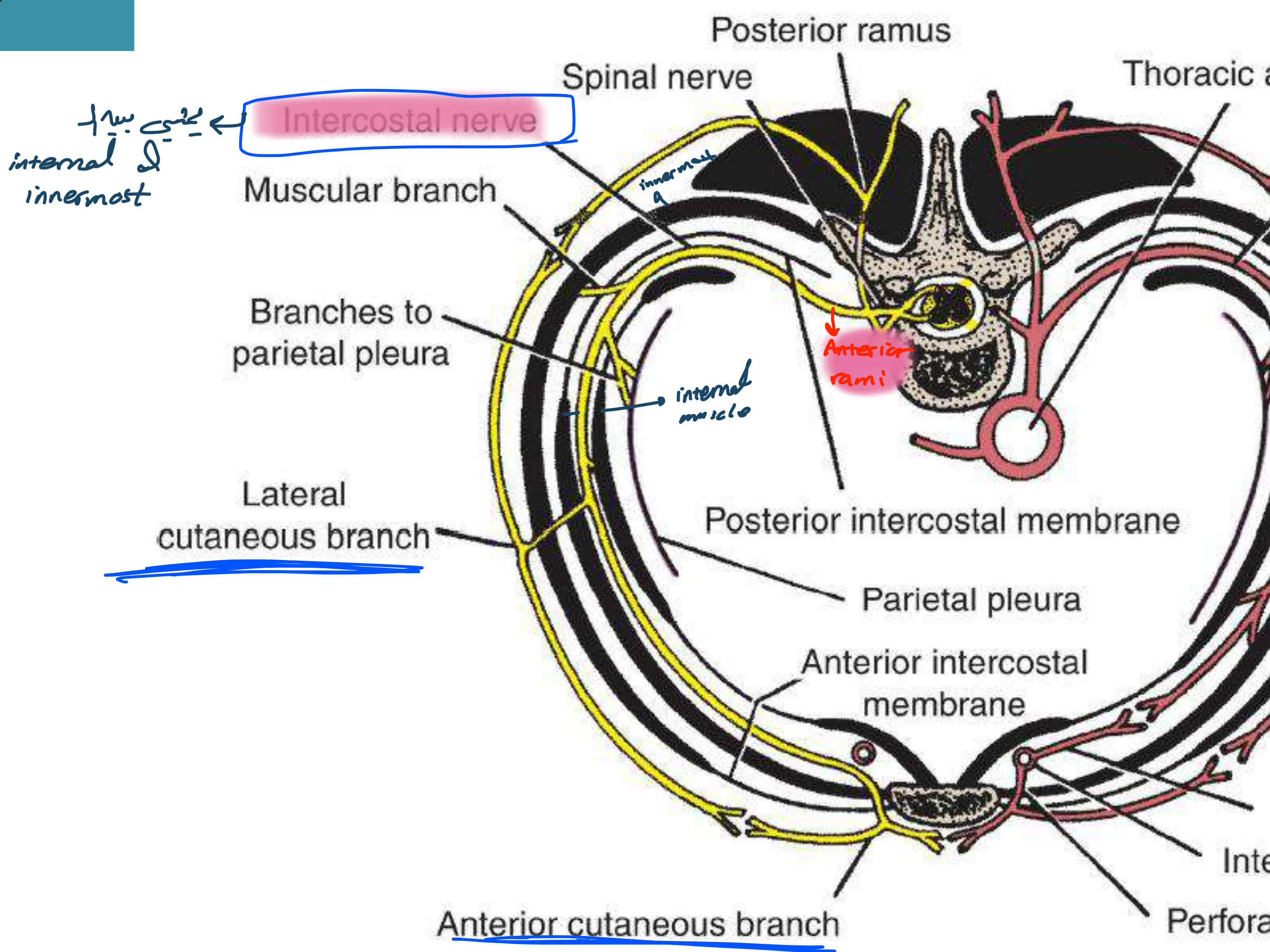
نعت، قسمة

Intercostal Nerves

بمضي في

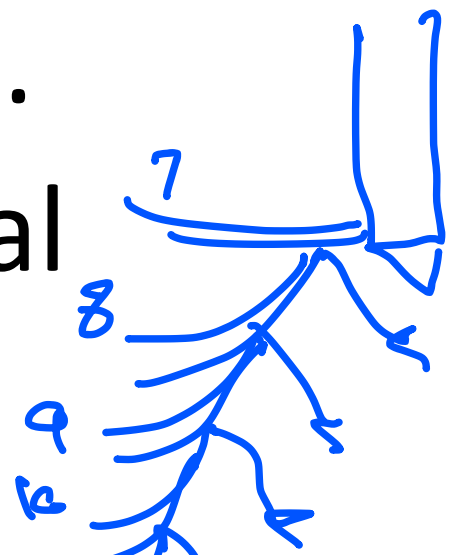
Costal groove بالقرني مع - arteries و veins راحة، artery

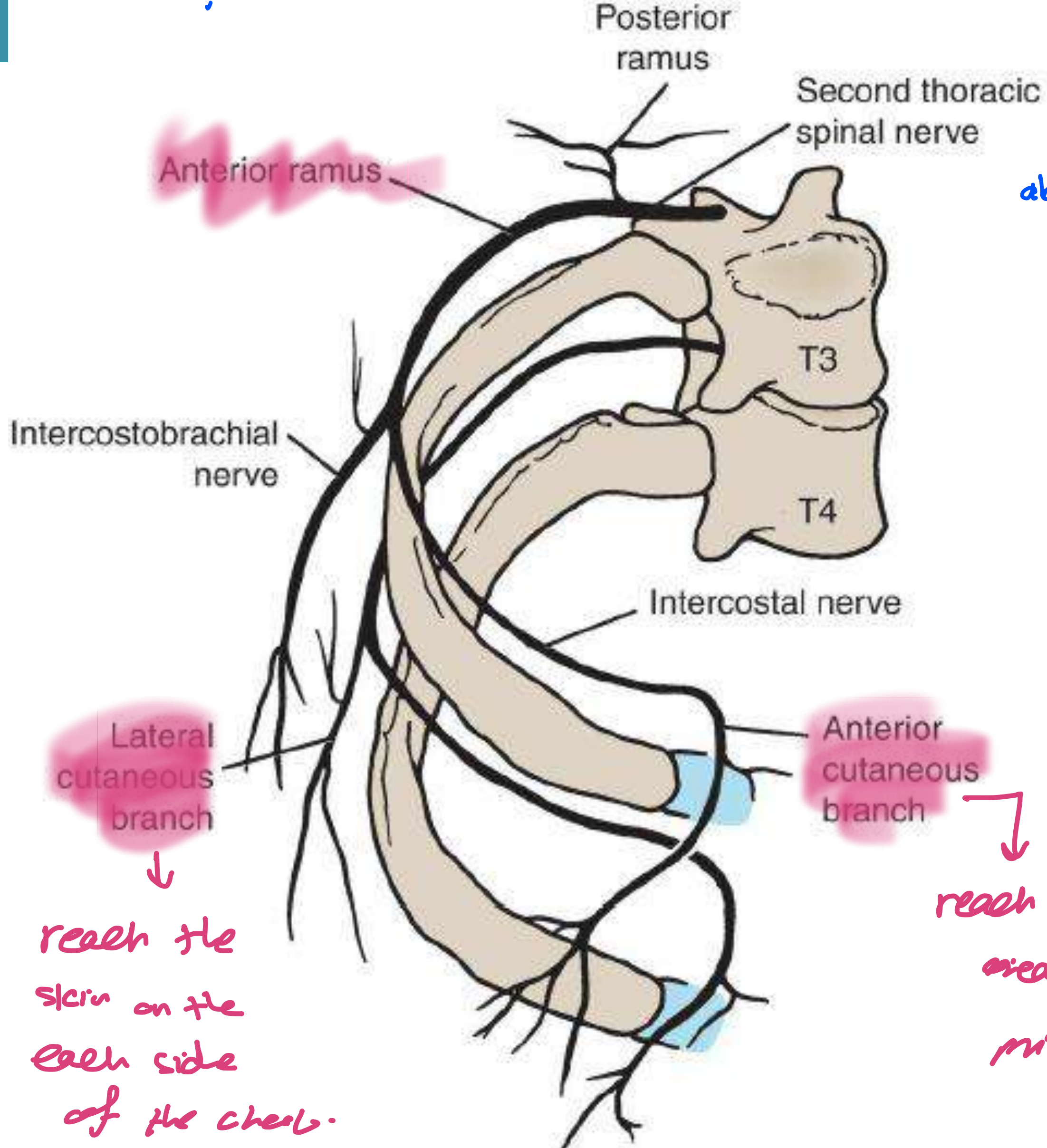
- The intercostal nerves are the **anterior rami** of the first **11 thoracic** spinal nerves.
branch = ramus لجمع
- The anterior ramus of the **12th thoracic** nerve lies in the **abdomen** and runs forward in the **abdominal wall** as the **subcostal nerve**.
لأنه أصغر
- **Each intercostal nerve:**
 - Enters an **intercostal space**.
 - Runs forward **inferior** to the **intercostal vessels** in the **subcostal groove** of the **corresponding rib**.
arteries and veins V A N
intercostal nerve - قسمة
rib - قسمة
يعطي بمضي في
 - Between the **innermost intercostal** and **internal intercostal muscle**.
costal groove
internal & innermost
لأنه



Branches of Intercostal Nerves

1. **Rami communicantes** connect the intercostal nerve to a **ganglion of the sympathetic** trunk.
 (فروع تواصلية تربط العصب القوسي مع العقد القارنية في الجذع القارني)
2. **Collateral branch** runs forward on the upper border of the rib below.
3. **Muscular branches** run to intercostal muscles.
4. **Lateral cutaneous branch** reaches the skin on the side of the chest.
 (فرع جلدي جانبي يصل الجلد على الجانب من الصدر)
5. **Anterior cutaneous branch**, reaches the skin near the midline.
6. **Pleural sensory branches** to the parietal pleura.
7. **Peritoneal sensory branches** (**7th-11th** intercostal nerves only) run to the parietal peritoneum.
 (فروع حسية بطني (7th-11th) من الأعصاب القوسية فقط تسير إلى البطني الجداري)





١١
 اختاره
 الى جدار البطن
 حتى وصل الى
 البطني

↓
 reach the
 skin on the
 each side
 of the chest.

↓
 reach the skin
 near the
 midline.

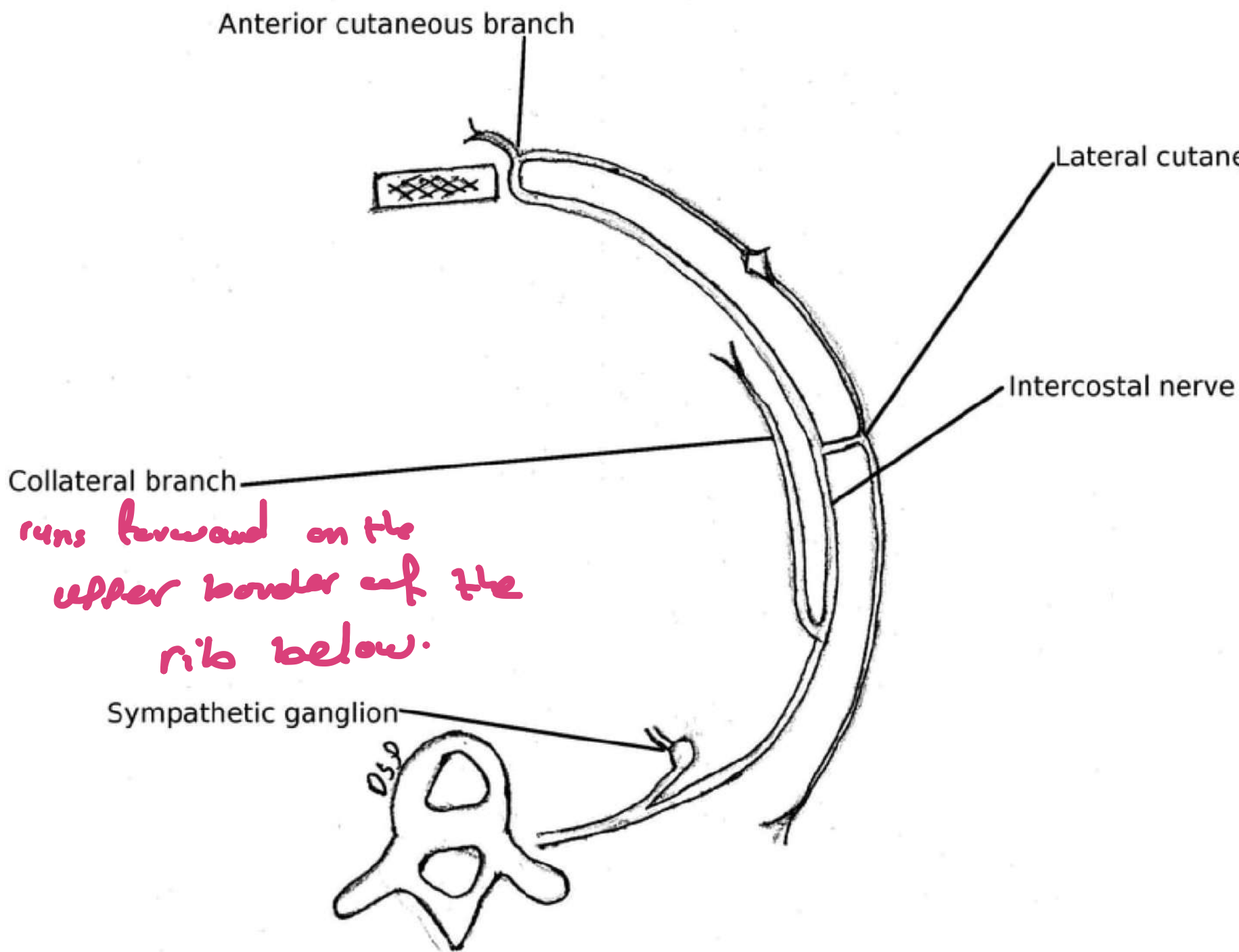
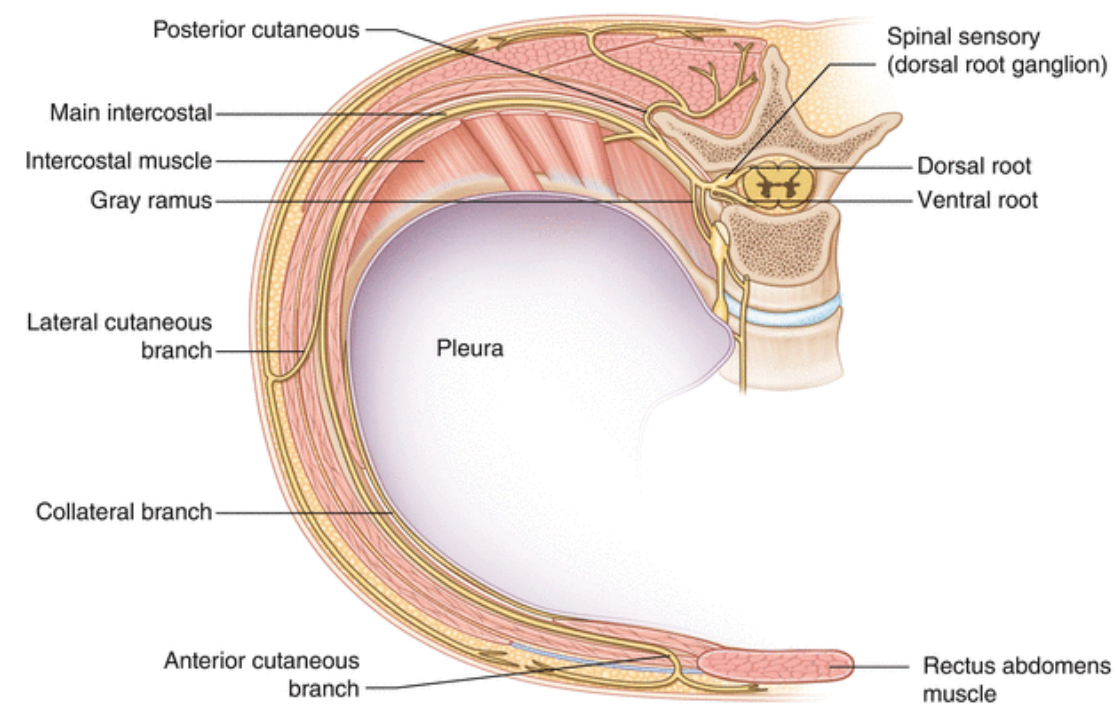
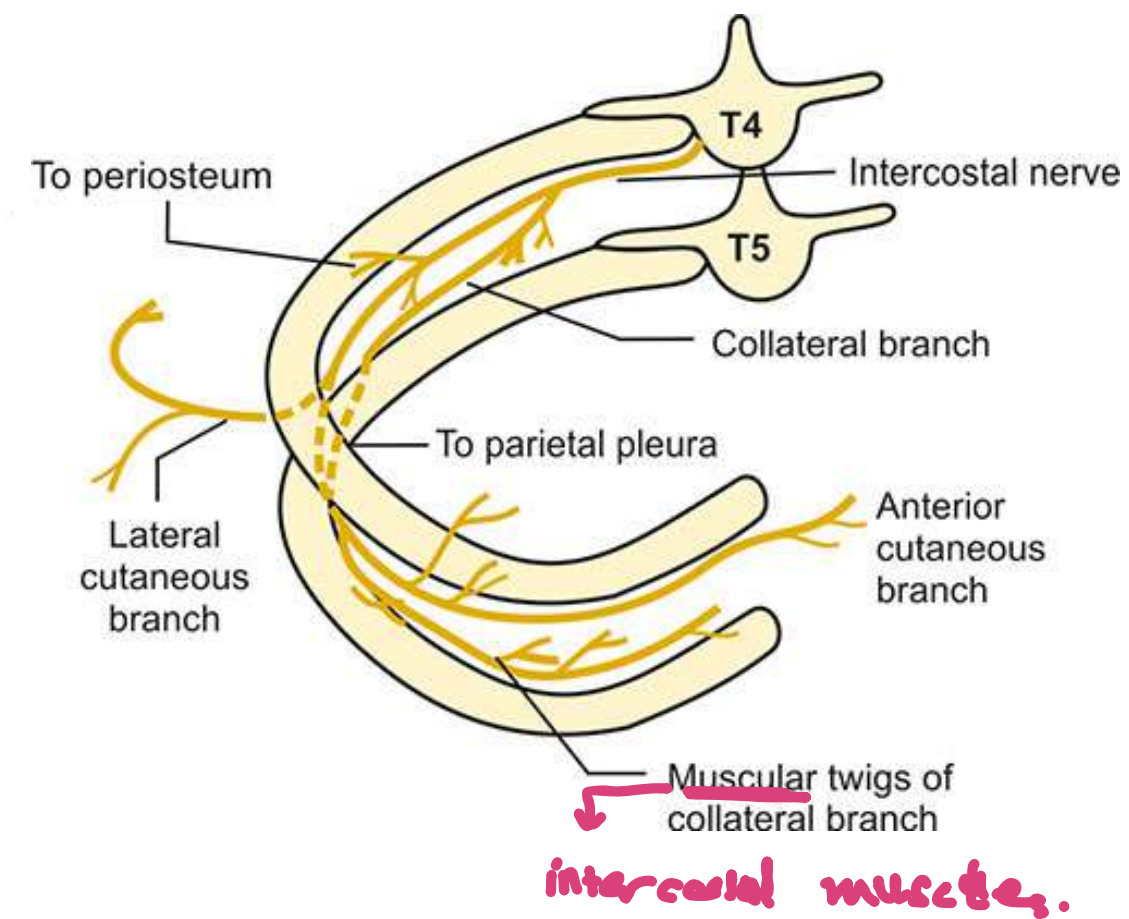


Fig. 2.5 Intercostal nerve



CLINICAL : Intercostal Nerve Block

- is indicated for repair of lacerations of the thoracic and abdominal walls, for relief of pain in rib fractures, and to allow pain free respiratory movements.

له مدى تنفس طبيعي بدون ألم.

* لما يجي المريض على التنفس يكونه rib fracture "تضلع"

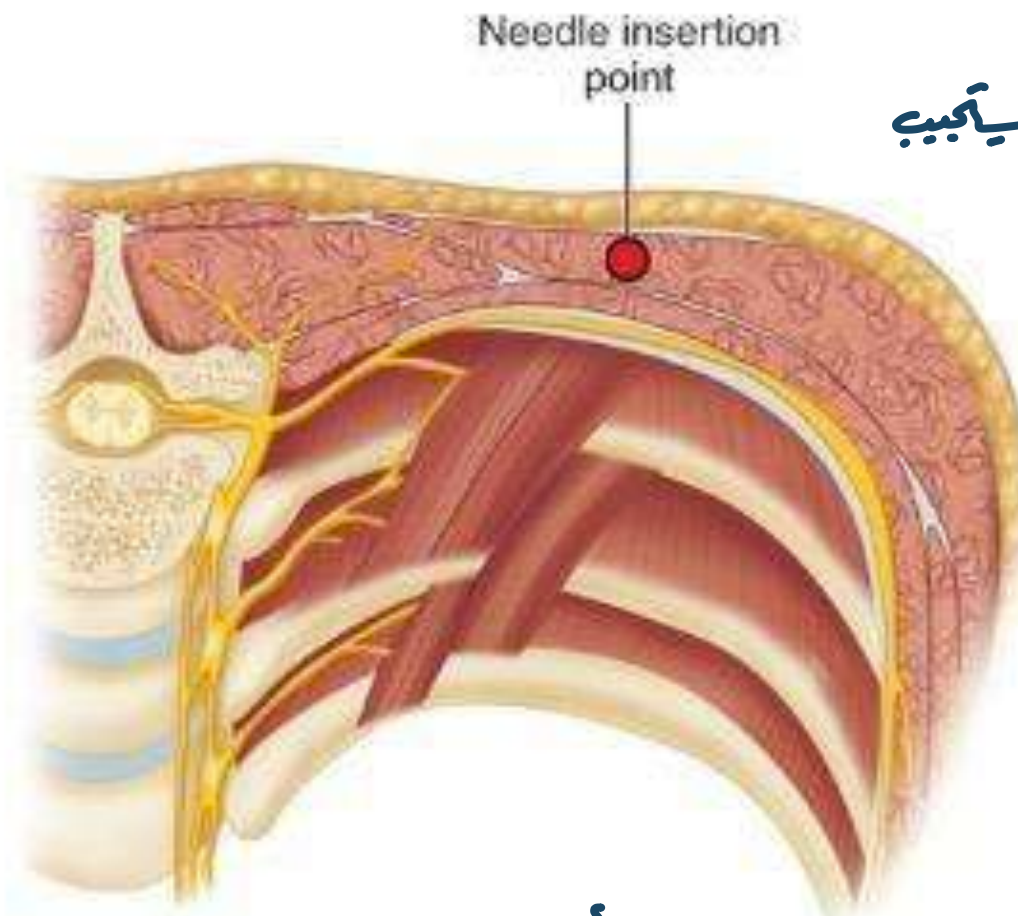
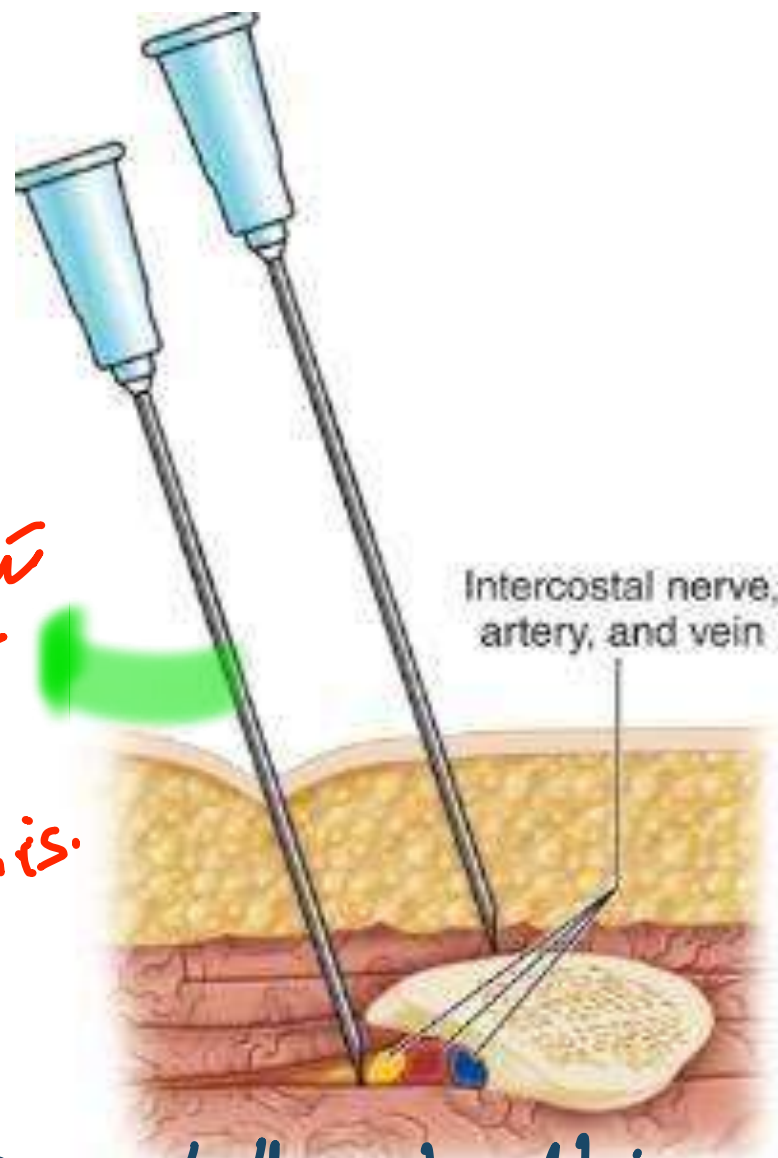
↓
تكونه very painful
لدرجة ممكنه ياتر على التنفس
ويدفن في التوابات كثيره.
ولو تعضيه مكان ما مع ليأجب

↓
الحل هذا تدفن على
nerve

وتعطيه قدر بصير
تنفس عادي.

* علاج ال
rib fracture

نفسه مكانه
ممكنه لو ما اذناشي
ممكنه تنفسه ويحركه ال
rib باللي حيتا لم بصير يجل تنفسه يدخلو حالة



تدخل تحت ال طائر
شئ فوقه
زيتا
chest tube
thoracocentesis.

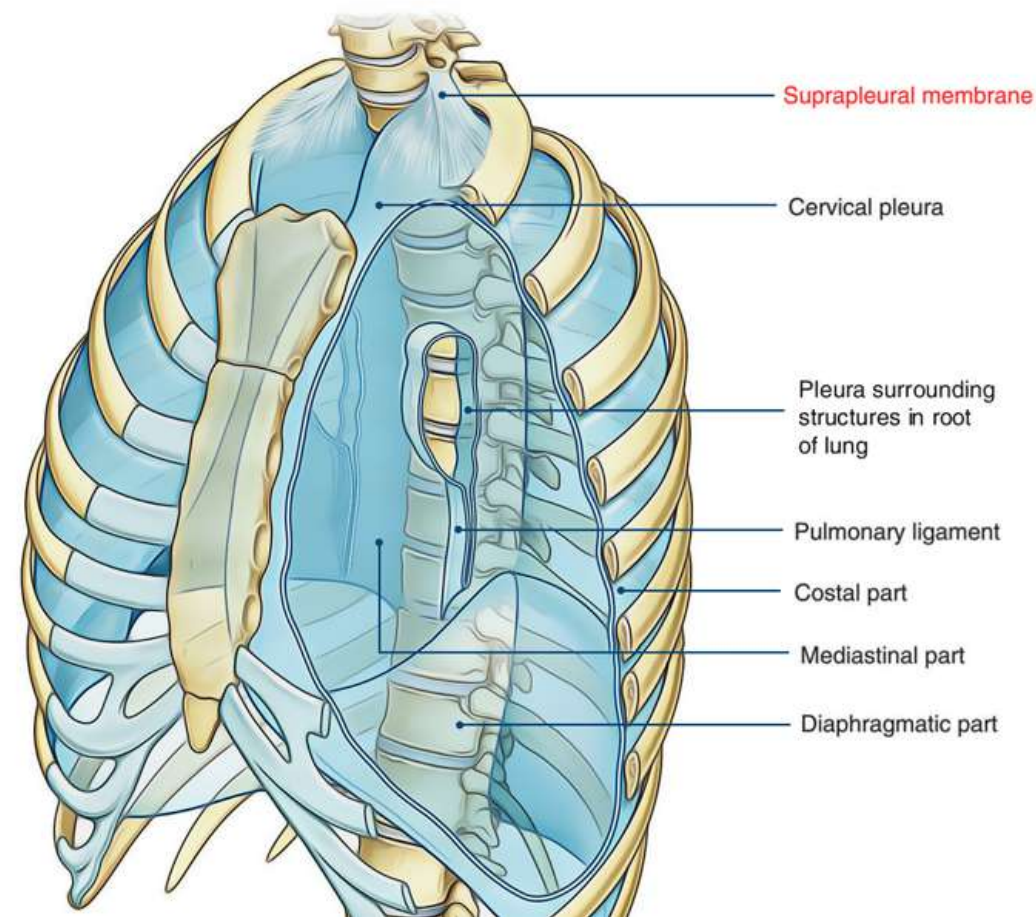
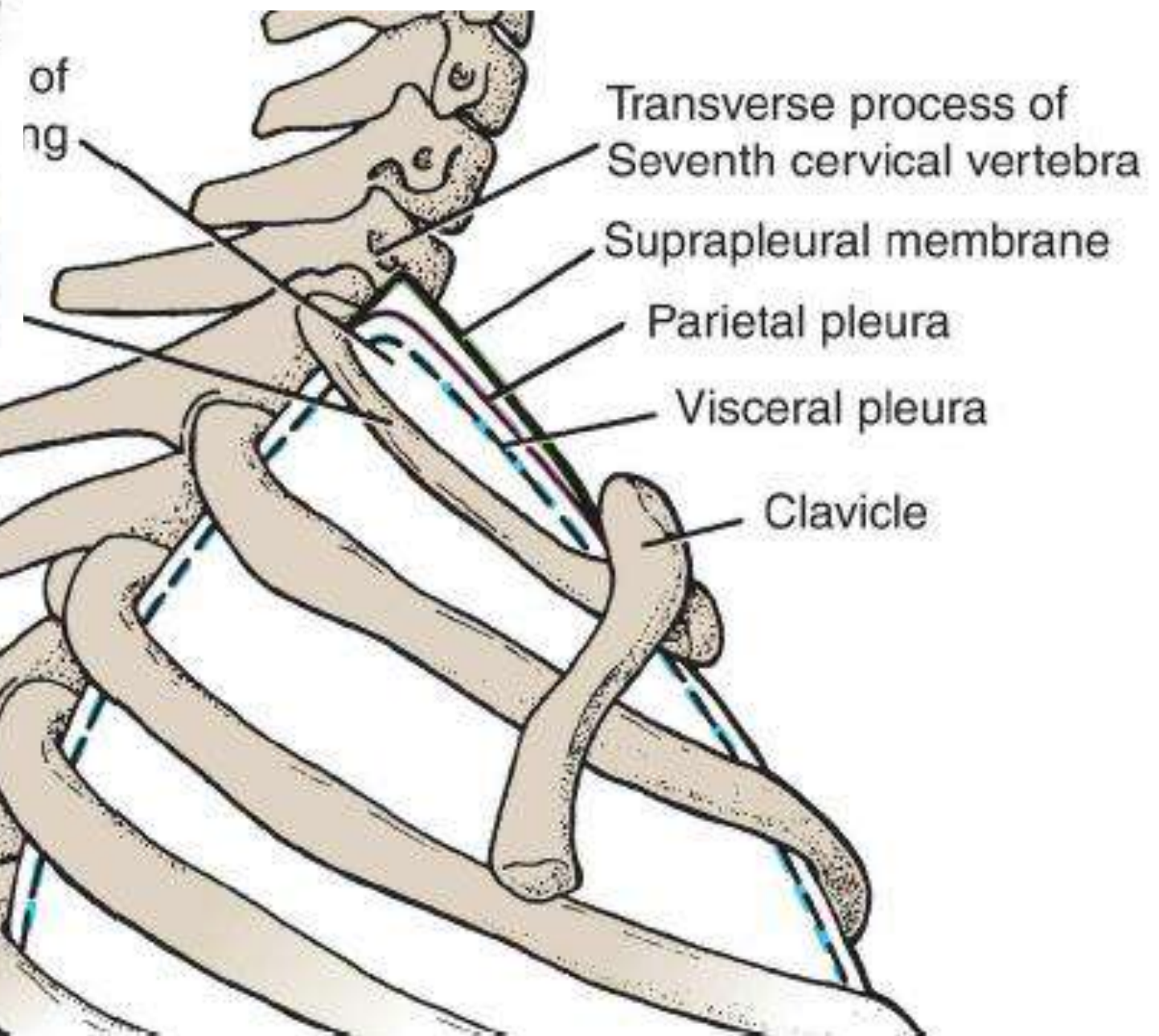
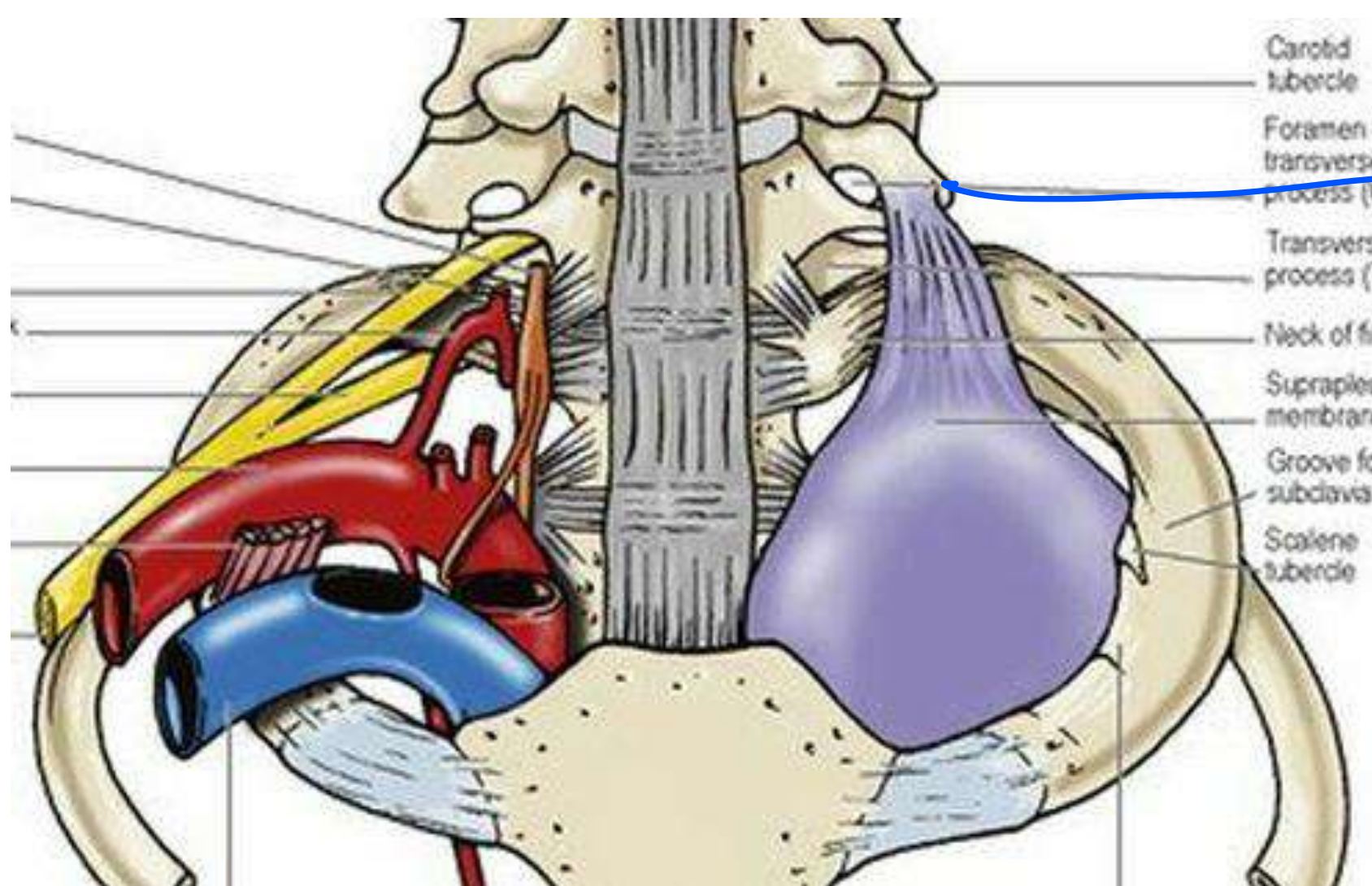
patient shallow breathing

Suprapleural Membrane

(Sibson's Fascia) *thin layer*

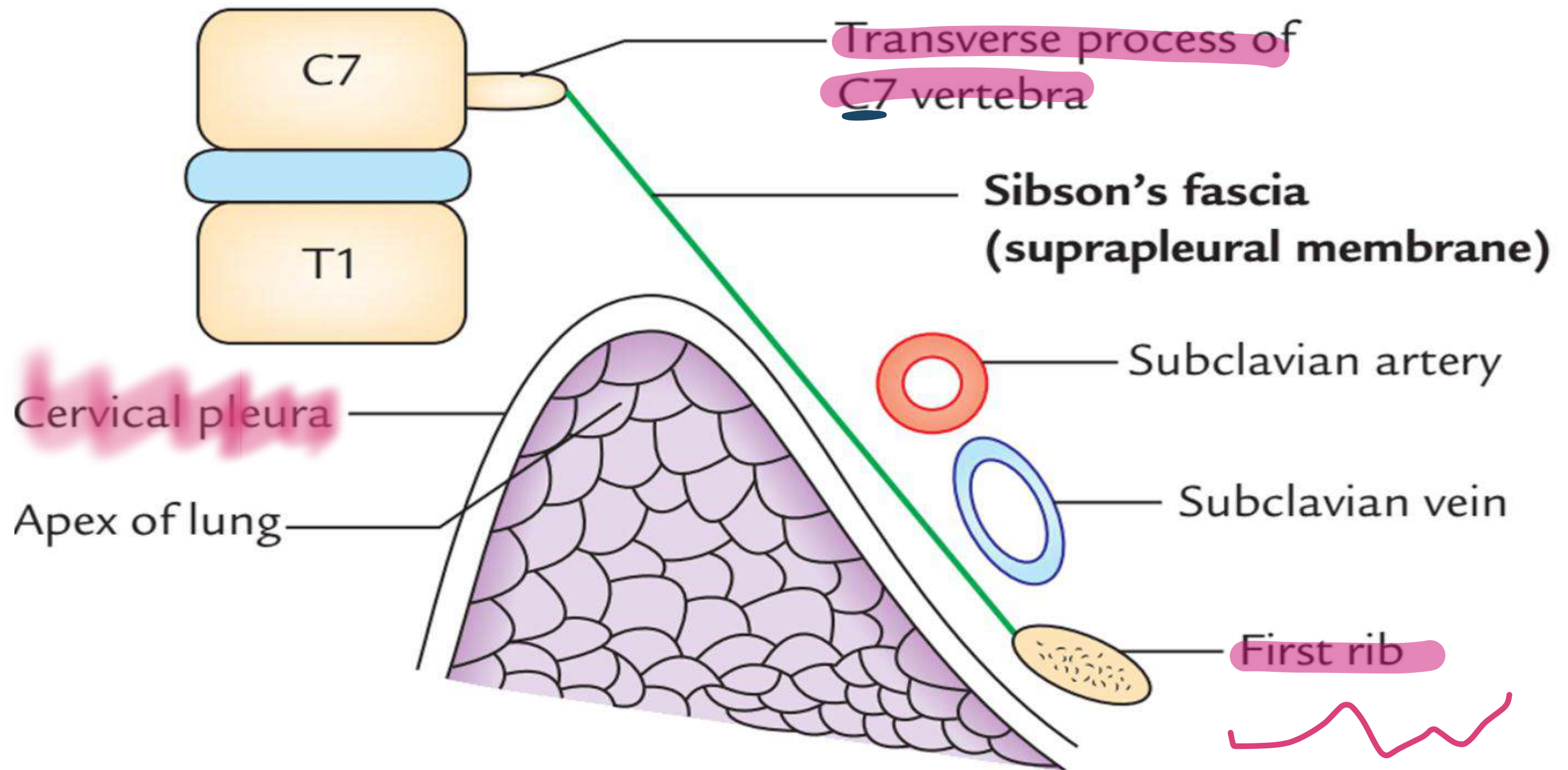
- is a dense fascial layer that closes the thoracic outlet.
- This ^{و حافة} **tent-shaped** fibrous sheet is attached:
 - **Laterally** to the medial border of the first rib and costal cartilage.
 - **Superiorly**: to the tip of the transverse process of the seventh cervical vertebra  *عشان شغل نوم ال 1th ريب و تدجيته*
شغل حافة
 - **Medially** to the fascia investing the structures passing from the thorax into the neck.
- It protects the underlying cervical pleura.
- Resists the changes in intrathoracic pressure occurring during respiratory movements. *حتى يبقى ال thorax*
منكسر

Suprapleural Membrane



Suprapleural Membrane

tip



Endothoracic Fascia

المهبط

- It is a thin layer of loose connective tissue that separates the parietal pleura from the thoracic wall.

thoracic
wall ~ جدار

* حافة صدرية

تستخدم لتحديد اتجاه
داخل الجسم من الخارج.

Surface Anatomical Lines

مباذد 2 lines
طاهر 2 lines
التي transvers
وهذا يفرق شوا organs من برا.

Anterior

" Midsternal Line "

1. Median sagittal line:

له يقسم 1/2 Chest يمين و يسار

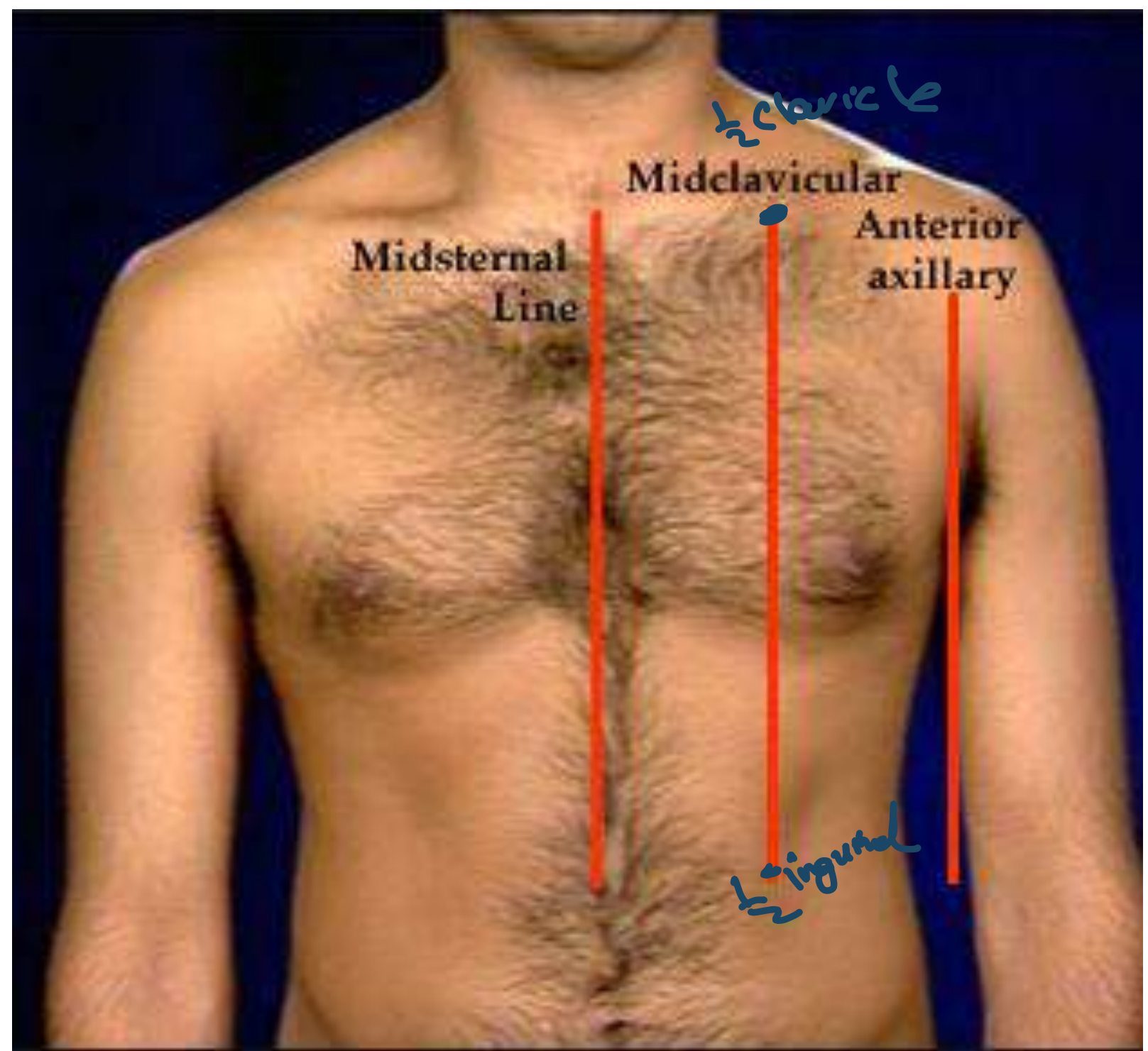
- intersection of median plane with anterior chest wall

2

2. Midclavicular lines:

وهو يقسم 1/2 من منتصف clavicle

- Midpoints of clavicles
- to inguinal ^{legament} region



Surface Anatomical Lines

لateral

Lateral

1. Ant. axillary line:

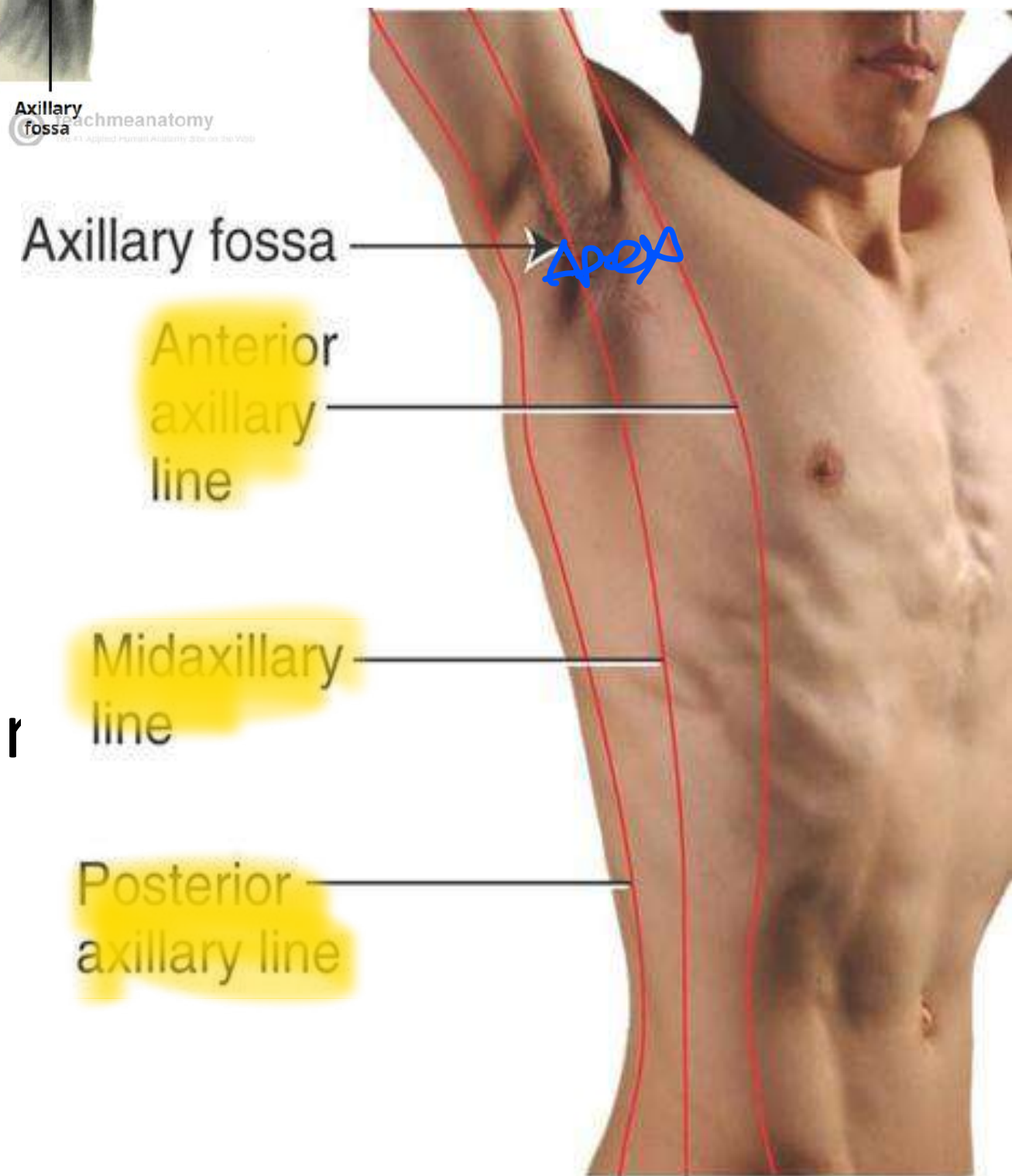
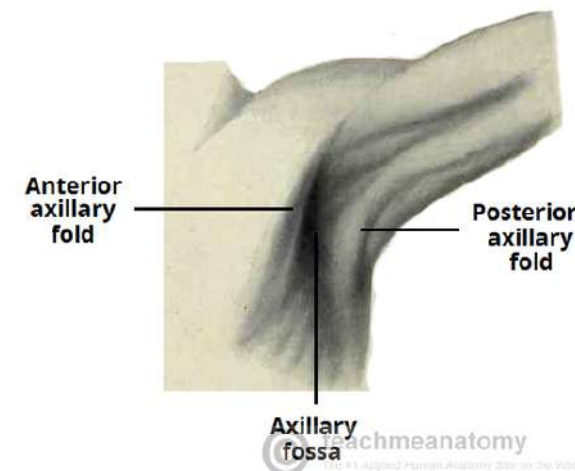
- Along ant. axillary fold
- (formed by border of Pec. Major m.)

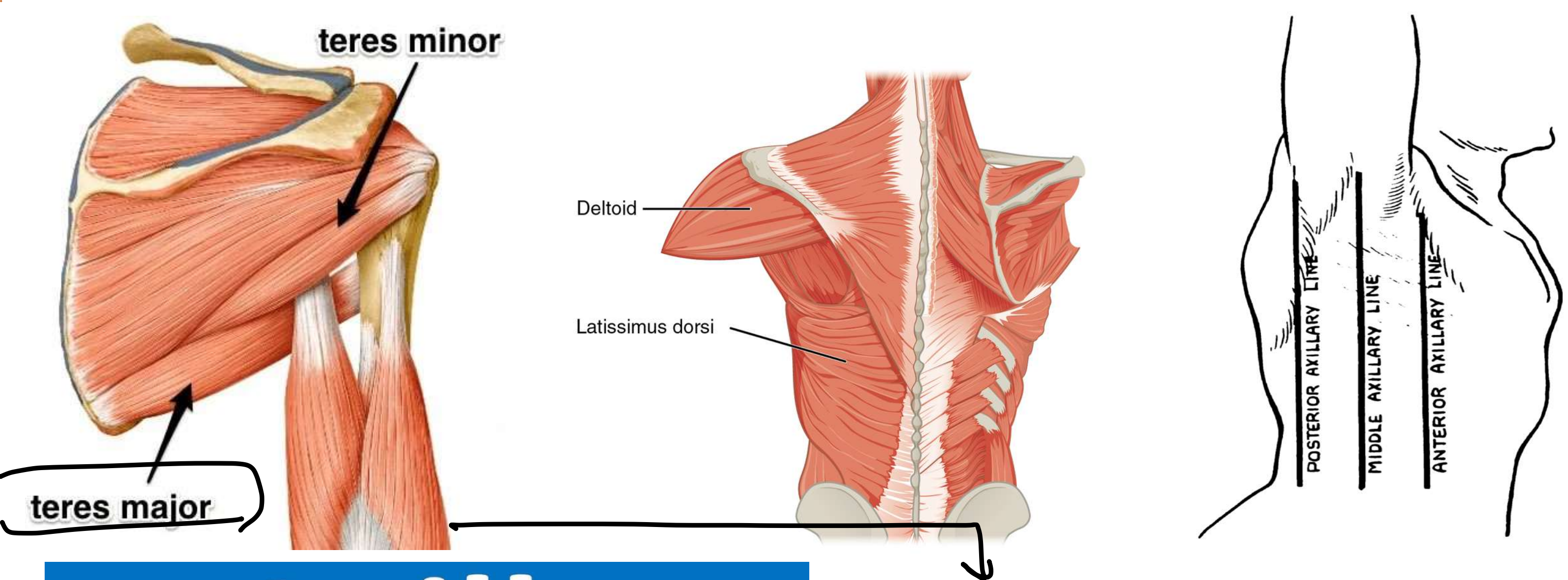
2. Post. axillary line:

- Along post. axillary fold
- (formed by latissimus dorsi & teres major M.)

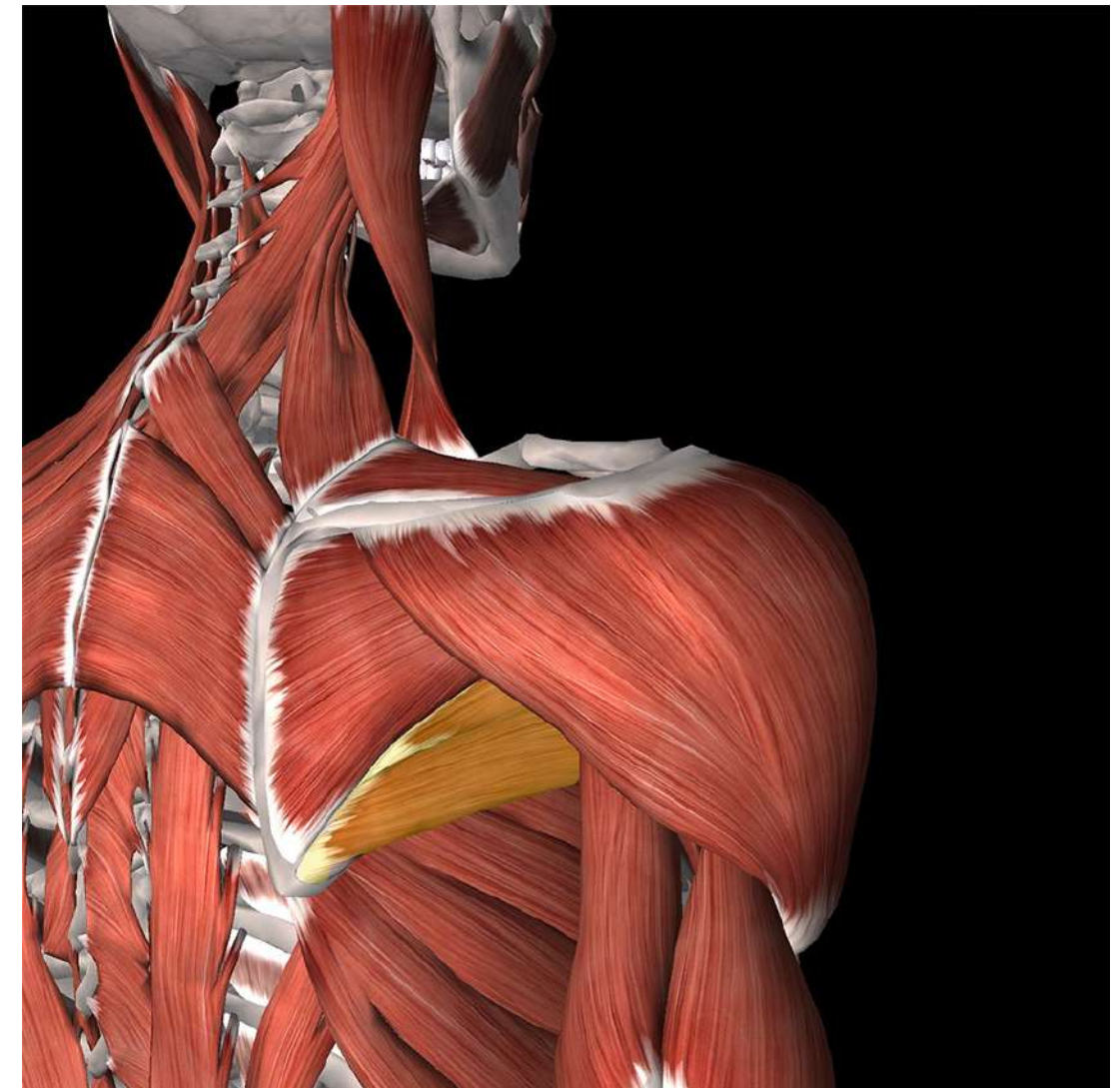
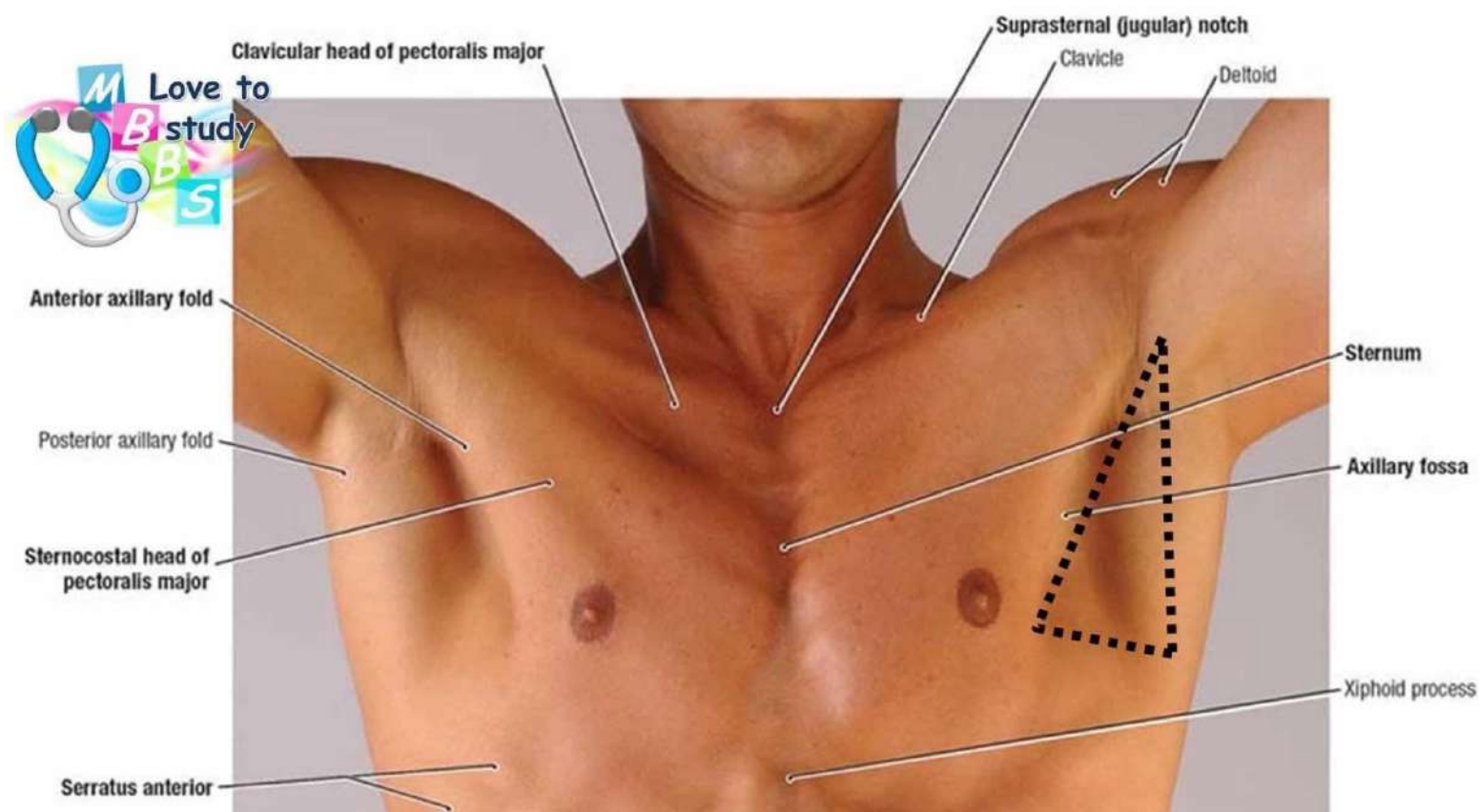
3. Mid axillary line:

- Runs from the apex of axilla
- Parallel to ant. & post. lines





Axilla



Surface Anatomical Lines

↖ midsternal
↗

Posterior

median / sagittal

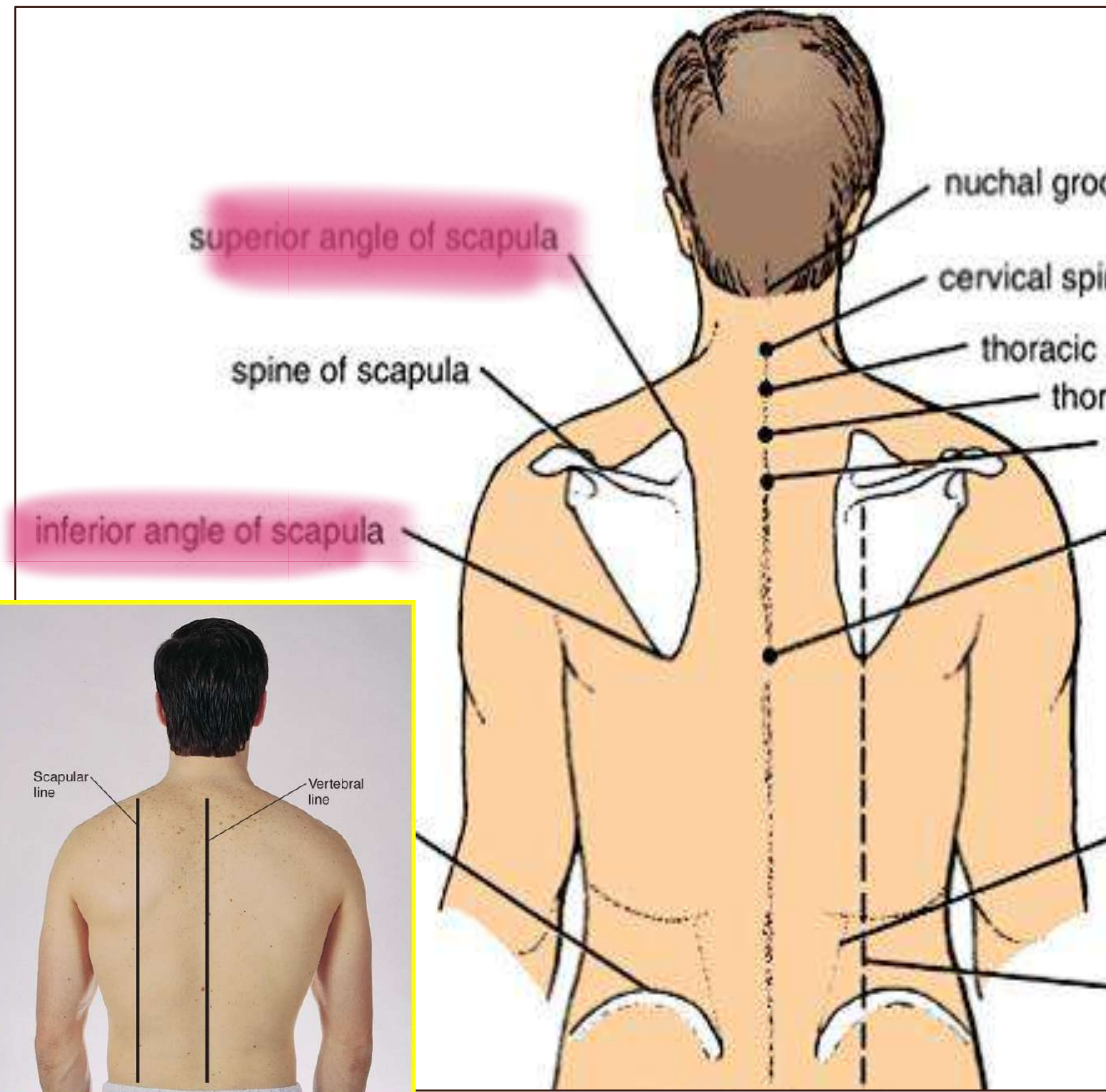
خط وسطی به سمت عقب

1. Posterior median line:

- Over the tips of spinous processes of all vertebrae ↗

2. Scapular lines:

- Through superior & inferior angles of the scapula when arms at anatomical position



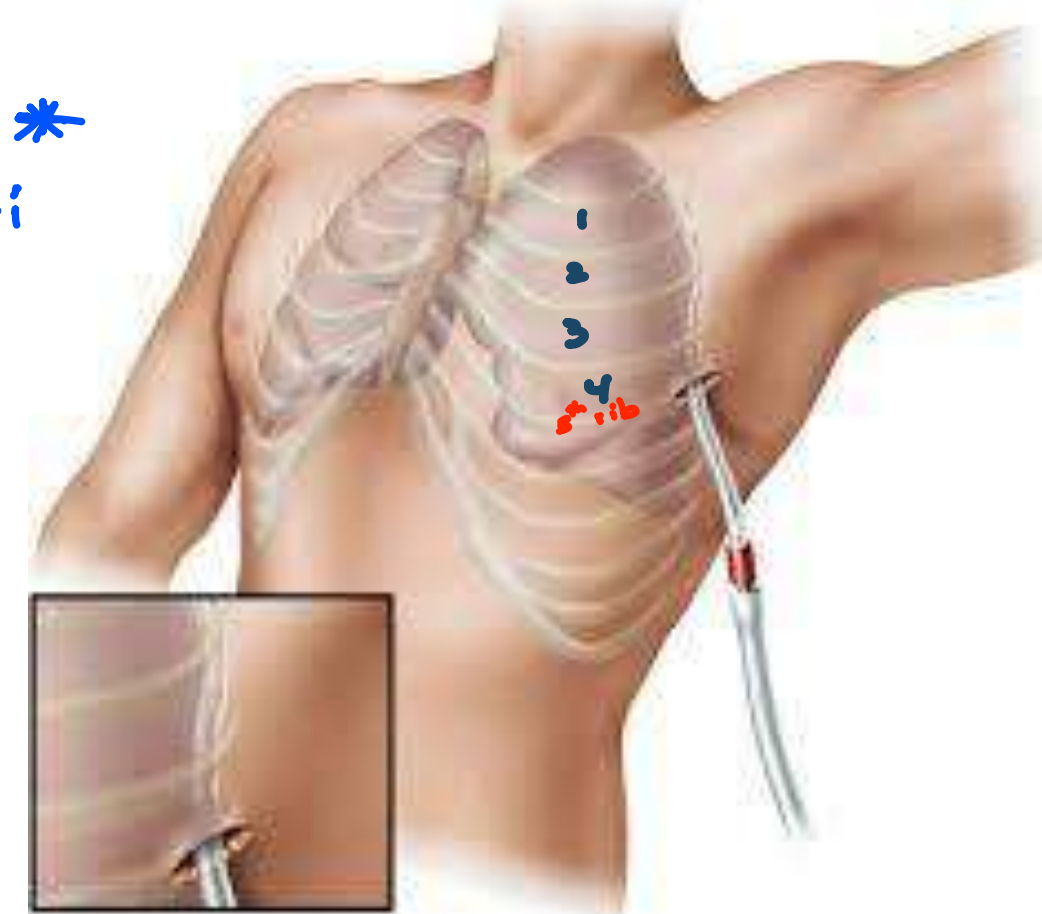
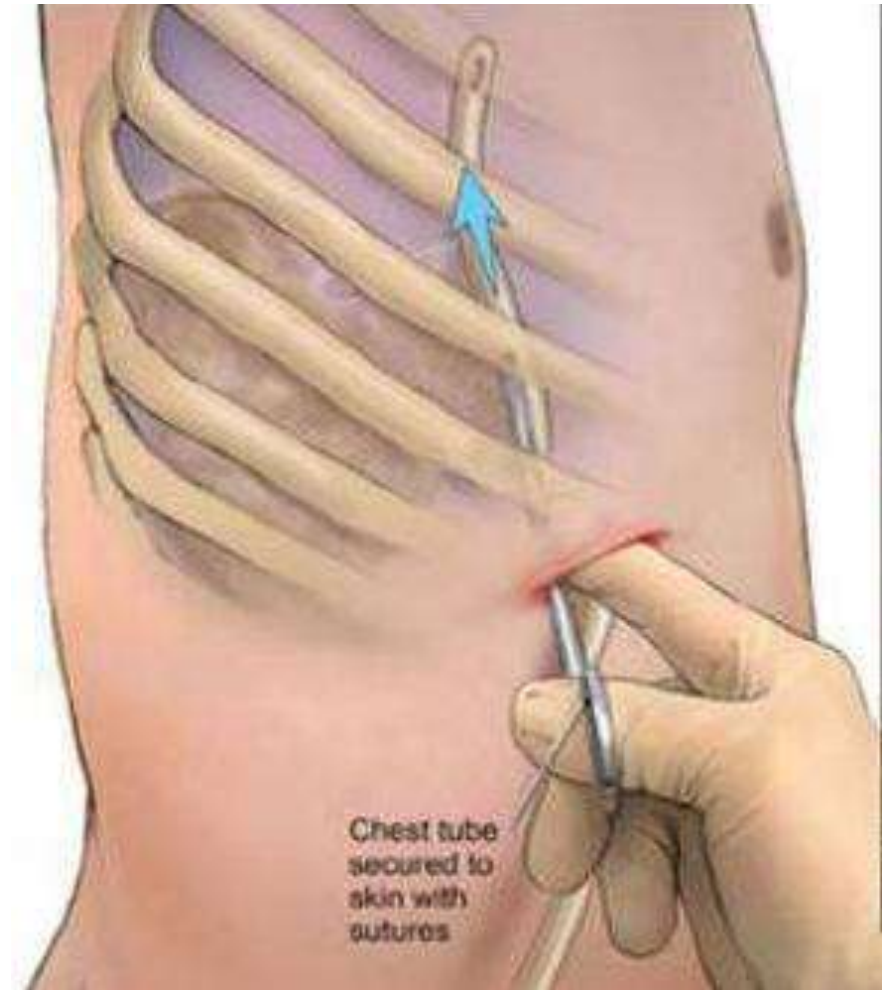
فتحة
opening in the chest

أنبوب الصدر

CLINICAL: Thoracostomy (chest) tube

- It is indicated to relieve air or fluid trapped in the pleural cavity. Hydrothorax
- It is done for **pneumothorax** or **hemothorax**. air in the pleural cavity
- It is inserted between the midaxillary line and anterior axillary, in either the 4th or 5th intercostal space. * مع رذاذ باعتماد
- You should be applied to the **superior** border of the **rib** (i.e., at the lowest position in the intercostal space). أنه

nerve, vessel
رأيه لوتهم إدخاله من تحت رية حذره عن عروق و



* لو المستنصر تم ضغطه سكتية هيفتح عنده $pleural\ cavity$

↓
ميسر الضغط برا < الضغط جوا
↓

ه يدخل الهواء . $lung$: متصغر
دستفغف على $pleura$
↓

لونات لفترة مضغط على $Heart$. $great\ vessels$ فكه ليرت منيا
↓

تسمى حالة $Pneumothorax$ ← air in the pleural cavity.

له دتزي ش $lung$ ال
ال $lung$ طبيعي بيا علما هو .

* الحل : يادفك أنبوب عتا . يجب الهواء

بالتاي لمريصة حبيب
ينزف . يهبر
جوا
دم + هواء .